

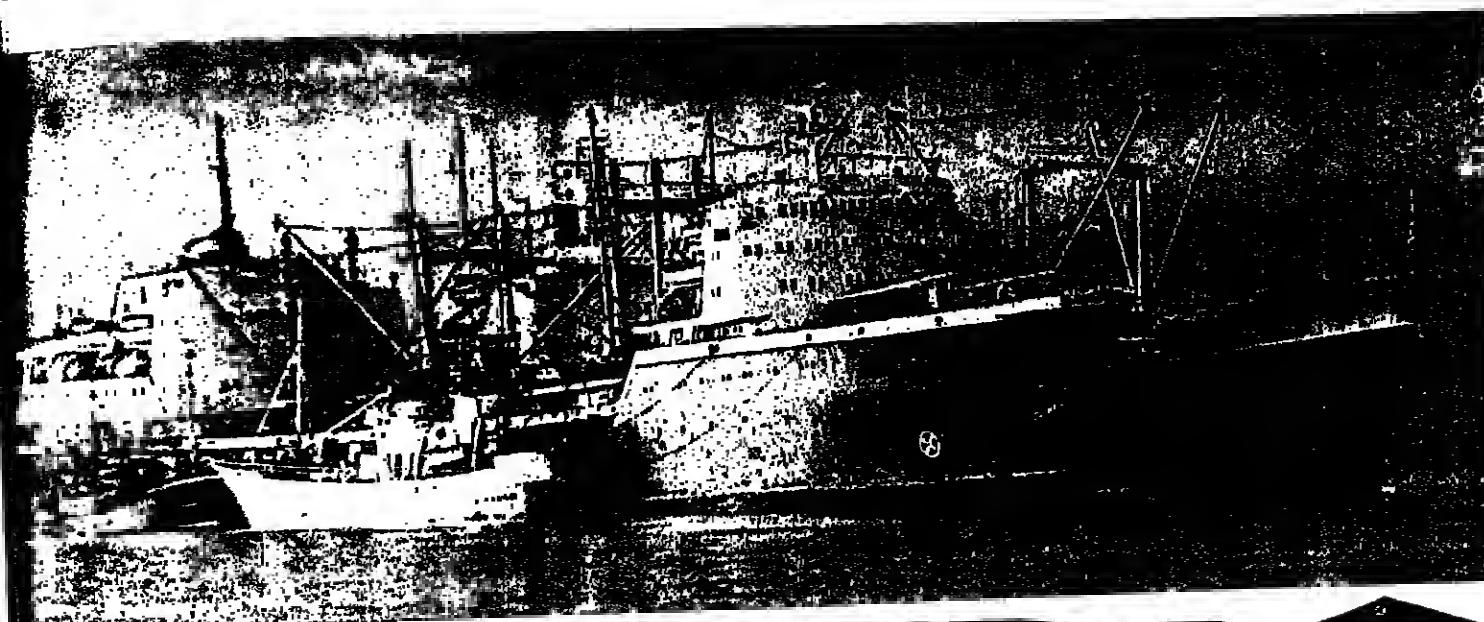
# fishing news international

January 1978 Vol 17 No. 1

75p monthly

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## BANNED!

### But Russians still net EEC mackerel

EUROPEAN fleets banned fishing in EEC 200-mile zones taking thousands of tons of fish. In a big factory ship operation they are transshipping mackerel from British vessels and fishing it at sea.

Eight factory mother ships from Russia, East Germany and the Soviet Union have been based a mile or more from the English south-

west coast for the past two months. And they intend staying until March when the season ends.

A pilot run involving the 13 000-ton Russian factory ship *Rybak Latvii* (one of 35 Polish-built B69 class vessels in the Soviet fleet) was successfully organised last summer by Swedish-based Joint Trawlers Ltd., off the Scottish west coast.

Scottish fishermen suffering from lack of shorehandling facilities for mackerel, have backed this operation in a big way.

Over 2000 tons of mackerel a month is being fed to the factory ships by a large fleet of British trawlers and purse seiners. Without this outlet for their fish, many of these vessels, hard-hit by quotas and exclusion from traditional distant water grounds, would have been laid-up.

Harry Barrett, editor of our associate British weekly *Fishing News* writes: "The East European operation has been a big boost for the British fleet. By the end of the season fishermen expect to have earned more than £1 million from the transhipped mackerel, which otherwise would have gone to the fish meal plant."

Report and pictures of the Russian factory ship operation on pages 28 and 29

### Peru closes more meal plants

THE PERUVIAN industrial fish catch has dropped below two million metric tons for the first time in nearly 20 years, and there appears to be very little chance of an early return to anchovy fishing in 1978.

During 1977, the total catch probably amounted to 1 850 000 tons. At the beginning of the year, the goal was about 4.5 m. tons of anchovy. But fishing for this species had to stop when it became clear that stocks were so depleted that any further catching might destroy the resource.

The eventual anchovy catch was about one million tons, and the industry has been advised not to fish this species for at least two years.

Pescapero, the state anchovy company, which last year sold its purse seiner fleet back to private owners, is closing plants and getting rid of redundant staff in an effort to stay viable.

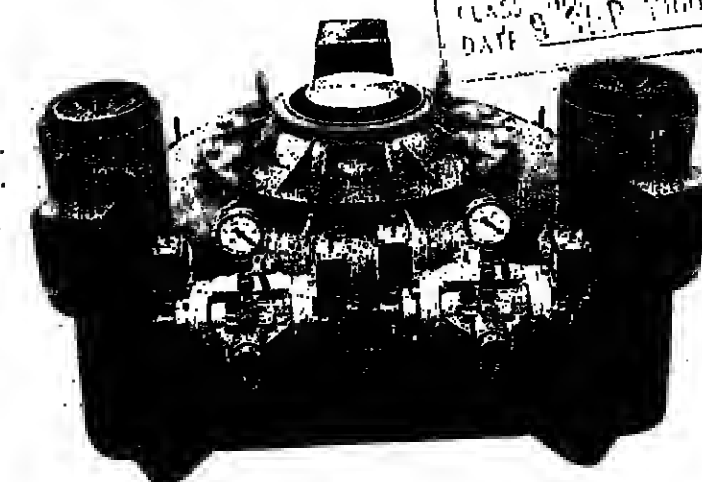
The original 98 plants nationalised in May 1973 have already been reduced to 44 with a total intake of 4443 tons of anchovy an hour. These are being cut by half again.

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## Few pilchards left for export



A reminder of times of plenty. Cannery workers in Walvis Bay handle a full catch of pilchard.

RECENT research into the pilchard resources off South West Africa (Namibia) reveals that stocks have fallen to a dangerously low level. At an estimated half-a-million tons, they are probably at their lowest ever reports FNI correspondent Michael Stuttford.

In an attempt to halt the decline, the recommended quota

for 1978 is only 125 000 tons, compared with 194 000 tons in the poor season last year and around 500 000 tons in each of the previous three years.

### Drastic cut

The drastic cut in catches makes it highly unlikely that canned pilchards will be available for export from Southern Africa in 1978. The local market is absorbing nearly six million cartons a year. Even if all the pilchards landed are suitable for cannery, production in 1978 will

be little more than two million cartons.

Once again prompted by scarcity of raw material (the first occasion was in 1972), the industry is expending enormous effort on improving the quality of fish entering the canneries. Many boats are being fitted for refrigerated sea water or for carrying fish in an ice/water mixture agitated by forced air.

In this way it is hoped to increase cannery yields from around 25 per cent to more than 40 per cent.

## NORWAY SAYS EEC TAKES MORE THAN IT GIVES

A COMPLETE breakdown in fishing relations between Norway and the EEC has been avoided, but only for the early part of 1978. Any eventual agreement will depend on the EEC establishing a licensing system for fishing vessels acceptable to Norway.

The provisional quota agreed in December applies only for January for some species and for the first quarter of 1978 for others. And the EEC is under pressure to come up with a permanent plan by the second week of January.

In 1976, EEC fishing countries caught about 500 000 tons inside the area of the Norwegian 200-mile zone; the Norwegian catch in the EEC zone was around 300 000 tons. But Norwegians point out that there was an even greater difference in the value of the fish taken, with much of the catch off Norway consisting of high-priced cod.

Leaders of the Norwegian industry have been expressing their frustration over the failure to come to an agreement with the EEC on fishing policy, including conservation measures.

"We cannot have our policy on co-operation with an organisation that is not willing to join in the responsible management of resources," complained Johan J. Toft, chairman of the powerful Norwegian Fishermen's Association.

Mr. Toft said that the aim had always been to achieve a balanced development of fishing in the North Sea, but instead "what we have got is an increasing imbalance in EEC's favour."

The Norwegian fishermen's leader said it was primarily the Dunes who had stepped up their fishing in the North Sea. Britain and Norway, he said, had always cooperated well in international bodies concerned with fish conservation.

### Licence system needed urgently

"I don't think it would have been particularly difficult to reach a sensible agreement with Britain on mutual fishing rights."

Fisheries Director Knut Vardal also warned that Norway might have to "take unilateral action" if an agreement on quotas and licences for 1978 cannot be agreed. In 1977, he said, EEC fishermen had caught more than before in the Norwegian zone while the Norwegian catch in EEC waters had been reduced.

Fisheries Minister Eivind Bolle told Rogaland fishermen at their annual conference at end-November that Norway had told the EEC "we shall need a larger share of consumer fish quotas in the North Sea in the period ahead." Norway was also demanding that Norwegian prawn fishing off Greenland must be allowed to continue at the 1976 level.

The Minister said that Norway was aiming at an agreement which would give parity in fish catches by 1982. This meant that EEC fishing in the Norwegian zone would have to be phased down considerably while Norwegian fishing in the EEC zone would be maintained at the level of recent years.

## Record world catch

THE world harvest of fish, crustaceans, molluscs, and aquatic animals and plants reached a new record total in 1976 of 73.5 million metric tons.

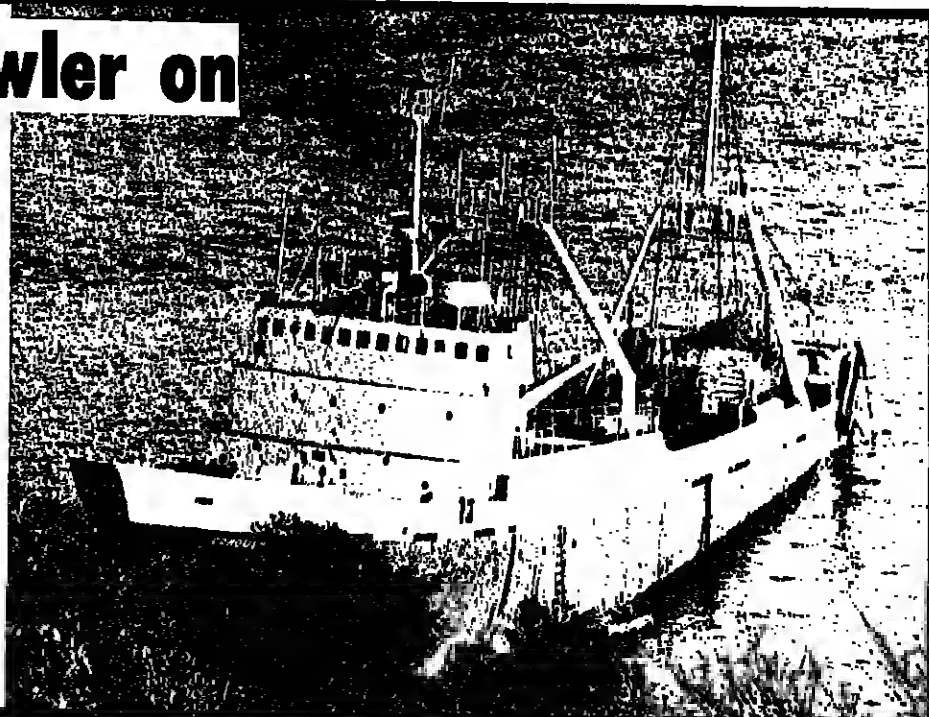
After rising steadily in the 1950s and 1960s, the world catch reached 70 m. tons at the beginning of the 1970s but for six years it hovered around that amount. The increase in 1976 is shown in Vol. 42 of FAO's Yearbook of Fishery Statistics, just published.

## Mackerel trawler on the rocks

A trawler lies fast aground on jagged rocks below the cliffs near Mousehole in Cornwall. She is the 71 metre long freezer trawler "Conqueror," the second British vessel to come to grief in December in the mackerel fishery off the south-west of England.

Earlier, the small trawler "Boston Sea Renger," was overwhelmed by a wave while fishing and sank with the loss of five of her eight crew.

Built in Scotland in 1966, the "Conqueror" was owned by British United Trawlers. She had just undergone an extensive refit and was on her first mackerel trip.



### Dollar a ton to fish

FOREIGN SHIPS operating within Canada's 200-mile fishing zone will have to buy licences in 1978. Announcing this, Fisheries Minister Romeo LeBlanc, said the licensing plan was expected to bring in ten million dollars in fees.

Canada has applied her 200-mile limit since January, 1977, but has waited a year before asking foreign ships to pay for their right to work inside the limit.

Mr. LeBlanc said this will now cost them a dollar a ton for access to the zone, plus an additional fee for every day they are fishing. The licences state how long a vessel is allowed within a particular area of the zone.

The United States is also charging licence fees for foreign ships allowed into her 200-mile zone, but these are based on a percentage of the catch.

When in Canadian waters, foreign ships will be required from time to time to carry Canadian observers and to cover the cost of their salaries and other charges.

Fisheries officials estimate that about 500 ships will be licensed in 1978.

## Canadians plead for new ships

CANADA'S federal government is under pressure from the governments of the four maritime provinces to agree on a long-term strategy for Atlantic fisheries.

"Fishermen and the industry don't know what to expect due to the lack of specific 'ground rules' for the future," said Nova Scotia Fisheries Minister Dan Reid last month when the provinces presented their development proposal to federal Fisheries Minister Romeo LeBlanc in Ottawa.

This called for action on three fronts — fleet development, markets and arrangements with foreign countries.

The fleet development needed should be done by the private sector, but with strategic assistance from the government. The latter is needed "because the past depletion of our resource base has placed the Canadian fishing industry in such a financial state that it cannot adequately prepare for these



Nova Scotia's Dan Reid — 'ground rules' needed

future opportunities by itself."

Proposed for fleet development is an investment of more than \$900 million over the next ten years. Most of this would come from the private sector.

About \$260 million would be needed to replace half the inshore fleet — a total requirement of over 950

vessels, 300 of them from 50 to 70 ft long.

The offshore fleet, vessels longer than 70 ft., would need about \$500 million.

Its groundfish section presently consists of 102 stern and 101 side trawlers. About 100 of these vessels will need to be replaced over the next ten years with ships in the 130 to 170 ft. size range whose cost is around \$5 m. each.

In 1976, the Atlantic Canada demersal catch amounted to 470 000 tons. With recovery of stocks, a catch of about one million tons is seen as possible.

But there would still be stocks to fish that would require special ships such as freezer trawlers.

"If all the stocks which cannot be harvested by our traditional wetfish fleet were added together," says the proposal, the total would amount to about 750 000 to one million tons a year."

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## Taiwan switch pays off

A SWITCH in fishing emphasis in Taiwan from deepsea to coastal fishing and fish culture is reported to have paid-off in 1977 with a record catch of just over 900 000 tons. This was an increase of nine per cent over the 1976 catch.

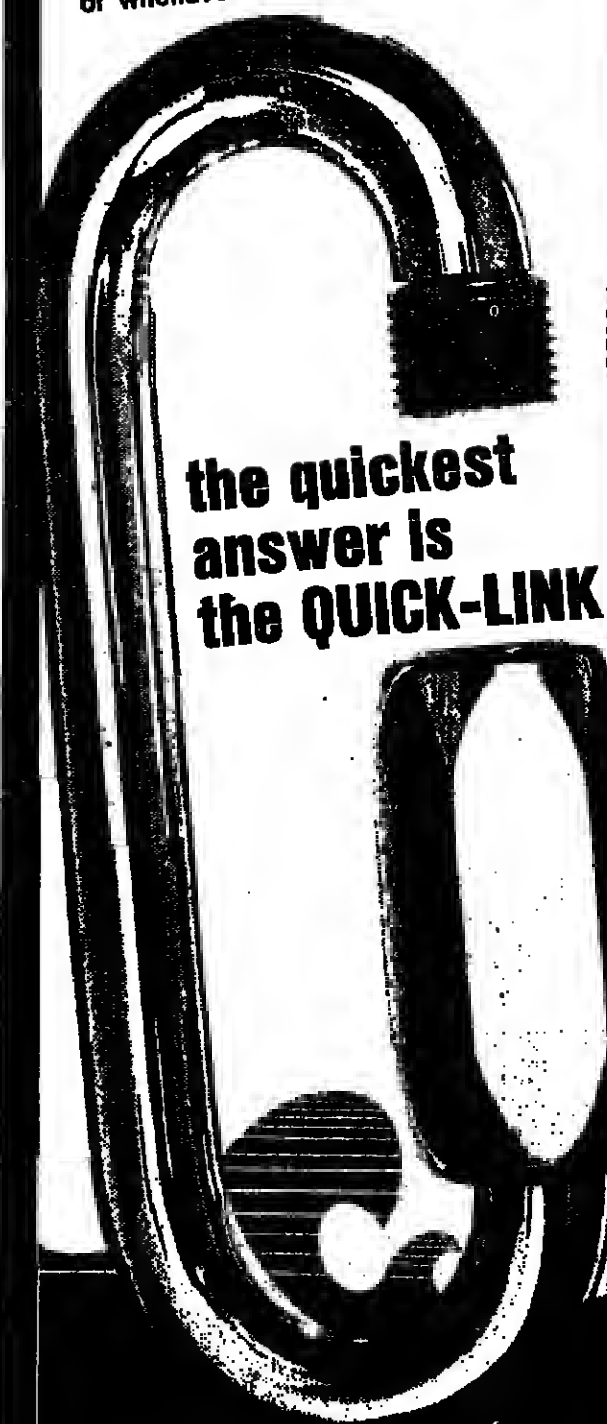
Like many other countries with ocean roaming fleets, Taiwan was hit by the soaring cost of fuel in 1973 and 1974. Some 300 tuna long liners had to be laid up and the catch in 1974 fell below 700 000 tons.

### Catch improves

Development efforts were then concentrated on the small coastal boats and their fisheries and on fish culture. Production in these sectors increased and in 1975 the catch recovered to 780 000 tons. In 1976 it exceeded 800 000 tons, although landings from the deepsea fleet showed a slight drop.

## A STITCH IN TIME SAVES NINE....

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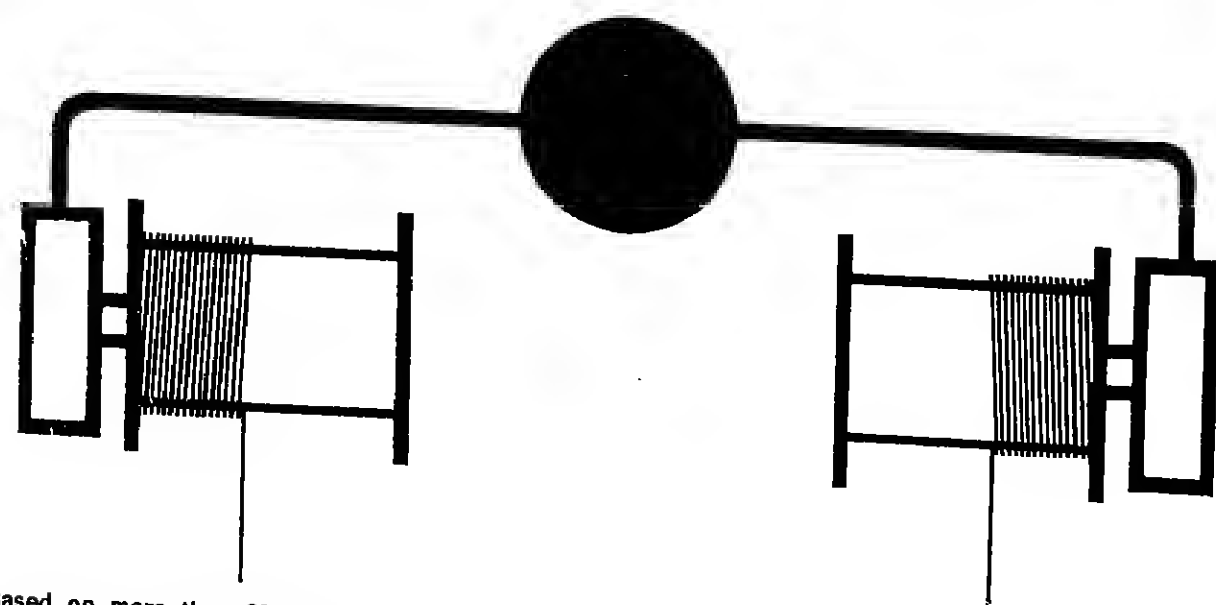
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## Brunei plan for largest ever prawn farm

A FISH and prawn farm planned for a former rubber estate in Brunei, south-east Asia, will be the largest of its type in the world, according to its organisers.

The large freshwater prawn, *Macrobrachium rosenbergii*, will be grown. This species has been well developed in aquaculture in recent years and several viable technologies are available for farming it.

### London consultant

Behind the project is a company called Borneo Fish Farm Ltd., whose directors include Mr. Michael Banks, described as a London consultant.

The project is reported in the newspaper *The Borneo Bulletin*, which says the fish farm company was registered by Centre Enterprises Ltd., of Hong Kong. The Brunei farm will include 1000 acres of ponds, a ten-acre hatchery, laboratories and freezing plant. Its production is expected to amount to about 1000 tons a year.

# CANADIANS TAKE OVER BRITAIN'S WET FISH 'SUPERTRAWLER'

THE CANADIAN east coast industry is to get Britain's most successful wet fish trawler. Sold by Newington Trawlers for an undisclosed sum to a company in Nova Scotia, the 176 ft (53.65 metre) long stern trawler *Hammond Innes* will be chartered to the Canadian government for fisheries research.



Built in 1972, *Hammond Innes* began her short but spectacular career in British fishing in January 1973. Four times she broke the national earnings record for a single landing, the last time in January 1977 when she sold a 164-ton catch for just under £90 000.

She won the Hull Distant Water Challenge Shield in 1974 and 1975, and was runner-up in 1976, when she earned £614 000 for the year.

"To have to sell a ship like this is bloody criminal," said the managing director of Newington Trawlers, Mr. Mike Burton. "The quote situation has forced us into this. There is just nowhere left to fish anymore."

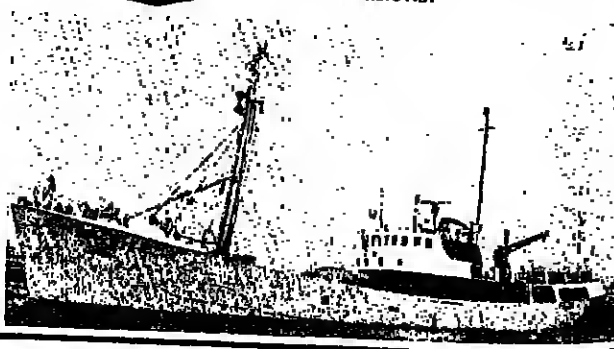
Another two British trawlers with outstanding records in their port are on their way to West Africa.

The side trawlers *Arlanda* and *Marella*, from Fleetwood, have been sold to Ghana.

Built in 1961, the 140 ft (42.7m.) *Arlanda* was top ship in Fleetwood on several occasions.

Away to Canada. The stern trawler *Hammond Innes* will change her role as Britain's top earning fish catcher to do research work off the Canadian east coast.

Made redundant in Britain by the closure of distant water grounds, the 431-ton motor trawler *Arlanda*. With another former Fleetwood ship, she will now operate from Ghana into West African waters.



## South African pursers try trawling

IN SOUTH AFRICA, where there is a relatively stable pelagic fishery yielding around 400 000 tons a year, some purse seiners are test fishing with mid-water trawls.

Although this is opposed by deep-sea trawling interests, the authorities have allocated 16 licences to local purse seiners, and two more may be issued. The industry is cautious about the new venture, reports our correspondent. Last month, only two companies — Marine Products and Kapp-Kunene — were planning immediate action.

Purse trawling is attracting the interest of the first, while the other is to try single boat trawling.

If the methods prove themselves, they could spread to the hard-pressed industry in

South West Africa (see Page 2), which might be helped to diversify to species other than pilchards.

In particular, it is hoped that mid-water trawls will bring in species such as masbanker (jack mackerel), which are often at depths below the reach of purse seines, and also in shallower water over rocky bottoms. Mesopelagic species, such as the lantern fish, are thought to be abundant off the S.W.A. coast and might be taken by mid-water trawls.

Purse seining is still considered to be the more productive method of fishing. If the shoals are available, and mid-water trawling is regarded as complementary. Therefore, the industry is seeking methods of rigging boats so that they can switch from one system to the other with little delay.

TEN JAPANESE ships, two from West Germany, Russian and probably East German trawlers, and a so far undisclosed number of Polish trawlers are now in the Antarctic. Where they are working and their methods of operation may differ according to the experience and the theories of their owners. But they are linked by their common purpose — the search for a suitable alternative to the aquatic resources now denied them, because of over fishing in familiar grounds, extended coastal zones, and also because distant water fleets of some countries have outgrown the availability of known fish stocks.

Denied the cod, hake, herrings or Alaska pollock which their long-range ships were built to catch, owners of the ocean-roaming fleets hope to find a part-substitute in krill.

In the search, they may also develop uses of other species in regions kinder than the far south to ships and men. We hope so. For we believe it will be a long time before the protagonists of the use of krill perfect the very complicated processes that will be necessary to convert it into an acceptable food for humans, or animals.

### Can be harvested

The skilled mid-water trawlermen of West Germany and Poland have demonstrated that krill, swarming in massive concentrations, can be abundantly harvested. They have yet to show that fishing can be spread over a period long enough for ships to be employed through most of the year; they have also to prove areas of consistent yield.

With these doubts we must also include the growing concern of scientists and others involved in the Antarctic over the impact of any large-scale fishery on ecological balances that are known to be very delicate. For example, how much krill can be safely fished? Perhaps a million tons. But what if

this was all taken from one small area, say around South Georgia?

Against a prospect of utilising the enormous krill biomass to the extent of 30 million tons and more a year (or of sending salmon out from southern hatcheries to start a new stock), an Antarctic park and game reserve may be seen as a luxury a protein-starved world just cannot afford. But the need for research into the effects of fishing is as great as the need for research into finding, catching, processing and distributing krill. And the reason is more than just a desire to protect the environment.

### The capital cost

The hunt for underused species in waters all over the globe is being carried out almost entirely by vessels displaced from other activities. They are available and work has had to be found for them and their crews. The krill projects, like those for exploiting blue whiting off the British Isles, have not yet had to carry the capital

cost of new ships. This, however, will have to be considered in any long-term programme.

Most of the ships now testing the resource are large, stern-trawler type factory vessels between five and ten years old. Also included are modern trawler-type research ships and a few big factory mother ships. At today's shipyard prices, a super-trawler of the type that may be suitable for the Antarctic could cost at least £6 million.

New ships such as these — possibly specially designed for their area and species — will have to figure in the costings of projects that may evolve from present probes. And state economic planners, or investors, will need to be persuaded that the resource to be exploited will not only be marketable, but will last for enough of the life of the ship to repay the initial cost.

Until there is such an assurance, krill fishing will be limited to fishermen that can find no other work, and to ships that have nowhere else to go.

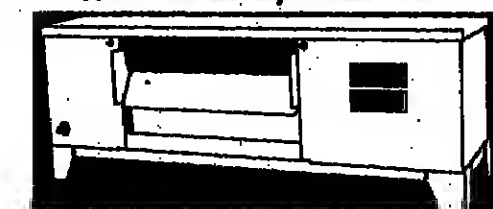
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## Pickupack freezer in Antarctic



THE SIERN TRAWLER *Julius Fock* is presently operating in Antarctic waters, with the research ship *Walther Herwig* in the second West German krill expedition. Built in 1969 by Rickmers yard in Bremerhaven for Reederei

Haus Pickupack, the 81 metre long trawler began her test fishing on bottom fish. Later in November she went to the area around the South Shetland and South Orkney islands. There she carried out processing tests on her first krill

catches, including mechanical peeling and production of krill meal. The two ships ended their first voyage on December 22 in Buenos Aires. They are now on the second of their three voyages, which is scheduled to end in February

## INDIAN Import 76 trawlers

THE INDIAN Government has approved the import of 76 trawlers for deep-sea fishing. These will be in addition to the 30 already approved for the year April 1978 to March 1979.

Of the 76 trawlers, all but two will be double-rig type vessels 23 to 28 metres long and capable of operating in waters down to 100 fathoms.

According to FNI correspondent Trevor Drieberg, the trawlers will come from yards in France, Japan, Holland, Singapore, Spain and the United States.

One trawler/purse seiner 50 metres long will be imported from Hong Kong.

# JAPANESE FISH FOR ANTARCTIC KRILL

NOW FISHING in Antarctic waters during the southern summer is a Japanese expedition sent to catch krill. The fleet consists of a factory mother ship, two research vessels and seven medium-size trawlers.

## Norway lobster project

A SYSTEM for raising lobsters on a large scale along the Norwegian coast is being developed by SINTER, the industrial research organisation attached to the University of Technology, Trondheim.

The project is under the direction of Professor Jens G. Balchen and is being carried out in co-operation with "a well-known Norwegian industrial concern."

## Sri Lanka backs cheaper boats

FISHERMEN in Sri Lanka should benefit from government proposals to provide cheaper boats and gear.

Boats will be offered at around £4400 each to individual fishermen. Initial payment will be about £1500, with the balance paid later. Concessions on gear prices will also be made.

Backing the proposals, Mr. Festus Perera, Minister for Fisheries, emphasised the need for aid to individual fishermen: "now that government-sponsored fisheries co-operation societies had proved unsuccessful. He added that badly-needed ice-making factories will also be provided in major fishing areas.

## HERRING INDUSTRY CHIEF SPEAKS OUT ON TWO VITAL ISSUES

# NOW IT'S £1 A FISH

CONSERVATION controls to protect depleted stocks in the North Sea and other areas have so restricted herring fishing that the British 1977 catch plunged to only 42 200 metric tons. This was less than half the 91 000 tons of 1976 and not much more than a quarter of the 1973 British catch of 157 000 tons.

But in 1973 herrings landed in the UK sold for an average of £60.44 a ton (or 3p a lb) for a total first-hand sale value of £9.5 million.

By 1976 the average had risen to £127 a ton and the total value to the catchers to £11.5 m.

Last year, despite the sharp drop in volume, the total value rose by nine per cent, to £12.6 m. And herrings in the UK in 1977 averaged just under £300 a ton (114p a lb).

Looking back over the year at a press conference in Edinburgh on December 29, the chairman of the Herring Industry Board, Dr. W. J. Lyon Dean, noted that the price the British housewife had to pay for herrings had increased by 225 per cent.

"A year or two back," he



Dr. W. J. Lyon Dean: Four wishes for 1978...

continued, "I said that herrings would be really appreciated for their taste, flavour, food value and vitamin richness when they reached the price of salmon."

"We have not reached that level mainly because the price of salmon has kept ahead of us. But the Dutch and the German housewife, in November, was paying the equivalent of £1 a large herring, and was saying that herring was a

delicious delicacy and well worth the money."

Looking to the future of the industry, Dr. Lyon Dean said that the work of UK negotiators in 1977 had ensured that no one in the EEC could be in ignorance of the state, needs and aspirations of British fishing.

He had four wishes for 1978. The first was that British ministers would succeed in having the EEC fisheries policy rewritten in a way that gave credits and debits where they have been earned. The second was the Parliamentary sub-committee looking into the British fishing industry would publish a report in the Spring that would "put heart" into the industry, unite it as a food producer and give it its rightful place in the economy of the EEC.

He hoped that the Producer Organisations which control fishing and fish selling would use their power in the widest interests of all associated with the industry, and of the consumer.

As a fourth wish, he hoped that the financing of fishing boats would be reviewed and the level and method of assistance made more compatible with present-day needs of the industry and its fishermen.



A Scottish purse seiner. "What prospective owner can accumulate £54 000 of capital?"

## Grant scheme is now out of date...

THE UK government's grant and loan scheme for fishing vessels needs updating, said Herring Industry Board chairman, Dr. W. J. Lyon Dean last month.

It should, he explained, take account of the expected new EEC fisheries policy and of the new value and sophistication of herring fishing vessels.

Giving an example, Dr. Lyon Dean said the price of a purse seiner was £558 000 to £1.35 m. The current grant and loan scheme provided a 25 per cent grant to an approved owner and a 50 per cent loan slightly above the going bank rate. And the owner had to pay an initial 25 per cent.

## Big deposit

"Taking the price of a vessel at the lowest of my figures," he said, "if three young men want to get a new boat, they have each to put down about £54 000 for a one-third share and borrow £108 000."

"With current taxation, what prospective owner can possibly hope to accumulate £54 000 of capital? A viable fleet requires young, viable

men. Other nations in the EEC are thinking about and in some cases tackling this problem. We must do so too."

One way might be for the Board (which has the statutory powers to do so, but no money) to take shares in new vessels. As the working owners paid off their loan, they would buy back the Board's equity on reasonable terms.

Another way would be for the statutory government fish authority to own the vessels and hire them out to carefully selected skippers and crews. But, having been brought up in the industry in Scotland, Dr. Lyon Dean was worried about any scheme that would disturb the successful, traditional system of fishermen owners.

A third way would be for the banks, in partnership with the Board, to finance new and second-hand vessels.

"We are willing and able to use our best efforts within our statutory powers to undertake a scheme of this kind," he said. "If need be, we can go with our friends to the Parliamentary Committee and ask for more powers and a raising of our borrowing limits."

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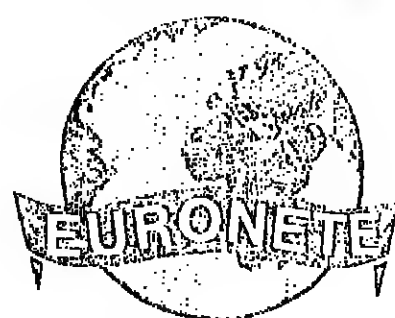
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# Wesmar news

## SS220 sonar locates 500 tons of herring

LAST YEAR'S Canadian herring season was a real test of man and equipment as they fought against time to harvest the herring. Vivian Wilson, one of the most respected sonar men in the B.C. fishery, reported a 500-ton haul for the three week season. "With more boats and shorter openings this year," he reported, "the Wesmar SS220 sonar really helped us."

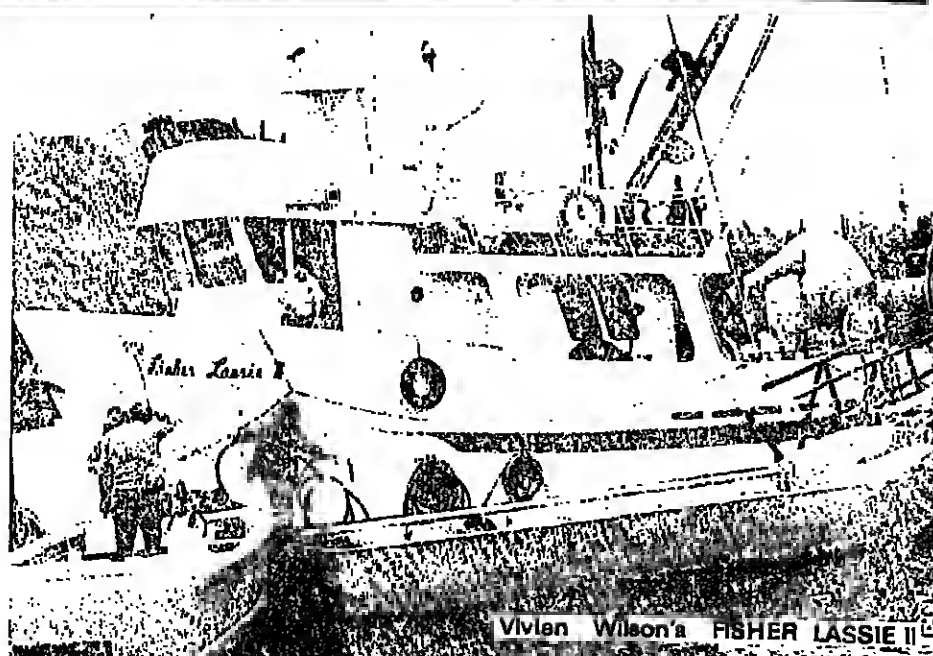
"You really need a sonar when there are so many

boats," said Wilson in commenting on the competition. "If you take time to size up a school, you'll have boats following you all the way. You can't make a turn without somebody turning with you. With the scanning sonar you can see the school on the screen and decide if it's worth setting on. Then just set on it right away."

During the Barkley Sound opening, Wilson used his SS220 sonar to good advantage. Nearly 160 vo-

ssels were prowling the waters as the time for the opening approached. "With so many boats, you can't afford not to have a sonar," Wilson said.

Wilson spotted a large school of herring with the SS220 and manoeuvred his 62-foot Fisher Lassie II for the set. "We saw the herring on the screen and it was solid herring," he said. This one set alone yielded 240 tons, one of the largest herring sets of the season.



Vivian Wilson's FISHER LASSIE II

## Catch due to SS220 sonar

GARY A. KRUGER of La Jolla, California, credits his Wesmar SS220 scanning sonar for a good part of his success in the U.S. tuna fishery. The Wesmar sonar was installed on Kruger's 530-ton, 160-foot tuna sinner Independence, which recently returned to San Diego with 400 tons of tuna. While the SS220 assisted Kruger in locating all of his tuna catch, there were 60 tons due entirely to the Wesmar sonar.

"Off El Salvador we found a log and checked it out with

the sonar," he said. "The CRT screen showed marks quite deep, so we waited around about an hour until the school came up to about ten fathoms. We sat on the sonar marks and hauled in 25 tons of skipjack." Kruger pointed out that there were no jumpers, no birds, and no other visible sign indicating fish.

In similar circumstances a few days later the Wesmar equipment found another 35 tons of fish Kruger believes he would not otherwise have discovered.

## Big haul pays for dragger's Wesmar sonar

AT THE end of a three day fishing trip in treacherous waters off Westport, Washington, U.S.A., Chuck Bray brought in 60000 pounds of shrimp on his Wesmar-equipped dragger Lady Darlene with no loss of gear. "The sonar paid for itself that trip," said Bray.

He was fishing in an area which is filled not only with shrimp, but with dangerous reefs. The Wesmar scanning sonar helped locate those

reefs so Bray could avoid snagging his net. "We could go right beside reefs where we couldn't go before we had the sonar," reported Bray.

With the help of the SS220 scanning sonar, Bray was able to locate reefs and shrimp grounds. "The sonar is new to me, but I use it all the time," said Bray. "It's easy enough to learn and has kept me out of trouble so far."

## Breakthrough in recorders

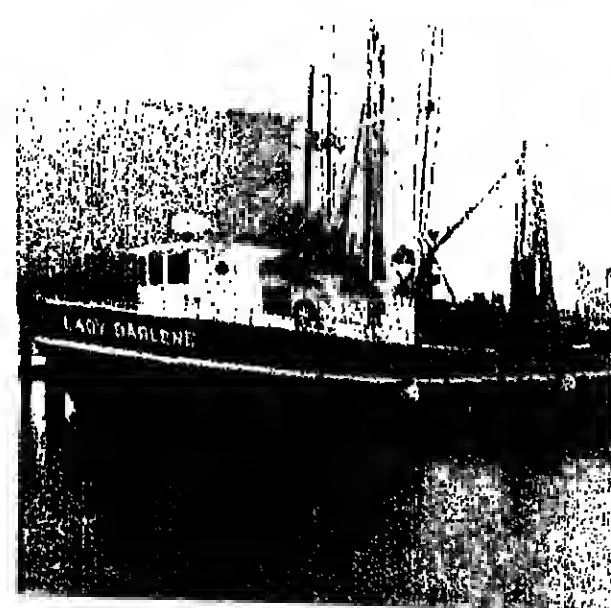
WESMAR has introduced a line of chart recorders revolutionary in design and engineering. Bottom Contour, Dynamic Bottom Suppression, and Bottom Track capabilities permit easier detection of fish near the bottom. The total area from bottom to surface may be charted, as well as specific sections of water. High and low frequency operation is available. No other line of chart recorders has these

features in such a compact console at so reasonable a price.

Wesmar's R80 chart recorder is standard equipment with the SS230 low frequency sonar. Targets displayed on the sonar CRT screen are also recorded by the R80 chart recorder. This provides additional information about target density and improves target location at longer ranges.



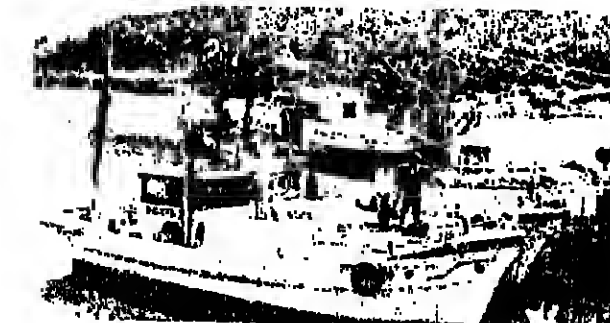
Gary Kruger gives WESMAR a high rating



The WESMAR-equipped LADY DARLENE



The SS230 low frequency sonar and R80 chart recorder



Two Japanese search boats and a net boat



Captain Ume on the KOYO MARU with his SS160

## Success draws the crowds in Japan

PHIL WERDAL, Wesmar's representative living in Japan, and Tokyo Kaito, Wesmar's Japanese dealer, report that 90 Wesmar scanning sonars have been sold in Japan during the last six months of 1977.

Many Japanese purse seiners, such as skipper Ume of Mito, Shikoku, Japan, find Wesmar scanning sonar superior for certain fishing operations. Ume recently purchased an SS160 for his 5-ton search boat, Koyo Maru, to locate the scattered shoals of sardines and mackerel and to monitor the netting operation.

Ume's success with the Wesmar sonar has become so impressive that competitive boats have begun to follow him closely. When Ume locates a favourable area, the other boats quickly go about getting part of the catch for themselves.

Without the Wesmar sonar, however, the other boats do not do as well. Of the boats that followed Ume during a recent trip, for instance, the top boat hauled in 10 tons of fish. Ume netted 80 tons that same night with the help of the Wesmar sonar. The next four nights saw Ume continue to outfish the other boats in the same manner.

WESMAR Western Marine Electronics, 905 Dexter Avenue North, Box C19074, Seattle, Washington 98109. Telephone: (206) 285-2420. Telex: 329508. Cable: WESMAR.

## More fish with Chinese help

A COMPREHENSIVE fresh water fishing project at Lake Nubia on the Sudanese White Nile will more than double the yearly catch with an estimated 1200 tons.

Financed by the Chinese government, the project based at Wadi Halfa includes building a 25-ton capacity cold store, electric generating station and a water reservoir. A workshop and training centre will also be established.

Since most fish will be consumed elsewhere, the Chinese are also constructing a 24-ton cold store in Khartoum and a 10-ton store at Atbara.

### Popular species

The cold stores will receive up to ten tons a week, transported by rail in refrigerated wagons.

Popular species caught include Nile perch and two kinds of bagrus, comprising 25 per cent of the total catch. Chinese experts will train some 150 employees to work 35 two-ton boats and several ten-ton vessels. Over 60 more are being trained in repair work, refrigeration mechanics and cold storage techniques.

With modern equipment, the Nubia catch could reach a maximum of 16 tons a day. Meanwhile, Khartoum's daily demand for fish, estimated at 20 tons, is not even half met.

### Problems

The difficulties lie in getting the fish to Khartoum. Part of the problem arises from the lack of cold storage facilities. Transport is another problem. There are few refrigerated wagons on the railways, and the roads are mostly unmade tracks or open desert.

A recent FAO feasibility study involved experiments with different types of containers and quantities of ice, and careful monitoring of the condition of the fish.

AUSTRALIANS are discovering the gastronomic appeal of the country's most prolific mollusc — the humble mussel. The new demand had led to a doubling of production since 1972, writes Noel Carrick. But, compared to that of other countries, Australia's harvest is still small.

In 1972 it was 483 metric tons; by 1976 it had risen to nearly 1100 tons, not counting the many tons gathered by amateurs.

There is little commercial mussel farming in the European manner. Most production is by dredging or diving.

### Landlocked area

About 90 per cent of Australia's production is in the state of Victoria. There, the main area is Port Phillip Bay, the almost landlocked 1970 sq. km. water around whose shores Melbourne's suburbs sprawl.

About 85 per cent of the mussels are harvested by dredging, but until last year diver John Morlock accounted for about five per cent of Australian production.

Hand picking high quality mussels from Port Phillip Bay, Mr. Morlock



## AUSTRALIANS LEARN TO ENJOY MUSSELS

sells his catch to Melbourne's top restaurants.

His fishing methods are simple. Operating alone from a small open aluminium dinghy, he gathers large mussels from reefs around the northern fringes of the bay.

He said his production is already falling, due mainly to his harvesting only the top quality molluscs — but also largely due to an infestation of starfish which is destroying part of the bay's marine food chain of which mussels and their spall form an integral part.

His life is physically taxing for he must dive three days a week, irrespective of weather, to maintain

his supply of mussels to restaurants.

As in all branches of the fishing industry there are problems. Melbourne is an industrial city leading to pollution of surrounding seas — and Port Phillip Bay is no exception.

A recent environmental study concluded that Port Phillip Bay was not contaminated to a serious degree — but nevertheless, two small areas have been closed to molluscs gathering for health reasons.

About 67 per cent of dredged mussels are processed in Melbourne. Most are pickled in vinegar, packed in bottles, and distributed throughout Australia where they are mostly sold in fish shops.

John Morlock hauls a bag of mussels in his dinghy in Port Phillip Bay.

## 'Gambia' collapse — state moves in

A SUBSTANTIAL government move into the fishing industry in The Gambia is expected to follow the collapse of Gambia Fisheries Ltd. with liabilities exceeding net assets by about £250 000. Gambia Fisheries was set up in 1970 as Swiss Cold Store with the Japanese firms Nichiro Gyogyo Kaisha and the Marubeni Corporation owning 80 per cent of the shares.

### Shareholders

The company bought, processed and exported fish supplied by local boats. Ninety per cent of its exports went to Italy, Japan, Las Palmas, France and the United Kingdom. Marketing was arranged through the local offices of the Japanese shareholders.

Over a three-year period 1972/75, the company is reported to have lost the equivalent of £400 000.

The government body taking over the activities of Gambia Fisheries will be known as the Fish Marketing Corporation. It will engage in actual fishing as well as buying and marketing.

There will be heavy emphasis on exports. And a concerted effort will be made to boost the Gambian catch.

This is presently around 25 000 to 30 000 tons a year.

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FNI/178



# US tuna seiners stay inside porpoise quota



WITH a sharp drop in the incidental killing of porpoises in purse seine nets, the United States tropical tuna fleet is off to an encouraging start this year. The tunamen expect the 1978 season to be much better than the grim one just ended, reports an *FNI* correspondent.

Incidental porpoise mortality last year was about 26 000, which was a quarter of the 104 000 permitted by the National Marine Fisheries Service (NMFS). But it is close to half the quota for 1978, and the very brief season in 1977 has to be taken into account.

Part of the 141-vessel US tuna fleet in San Diego Embarkadero before sailing for the eastern tropical Pacific tuna grounds off Central and South America.

Some 70 per cent of the yellowfin taken by the purse seiners are caught in association with porpoises. These enable the tuna fishermen to locate the tuna shoals, corral them with speedboats and then encircle them with nylon purse nets up to a mile long.

As it will not be economically feasible to abandon the porpoise technique, the industry has been concentrating on ways of saving the porpoises from entanglement in the net and drowning. Fine mesh webbing is used in the Medina panel and the Bold Contender system have helped; so has the backing-down technique.

Other improvements in porpoise releases might result from a research cruise by the purse seiner *Queen Mary*, starting in January.

Because of instructions by the NMFS to keep clear of tuna associated with porpoises, about five months of the early season were lost. The 210 000 short ton quota in the Conservation Yellowfin Regulatory Area (CYRA) — usually reached in March — was not taken until July. The quota is the same for 1978.

Harold F. Cary, general manager of the US Tuna Foundation and August Felando, general manager of the American Tunaboat Association are mildly optimistic that the fleet will be able to stay within the 1978 porpoise quota.

But Mr. Felando is less hopeful about the quota limits of 41 610 in 1979 and 31 150 in 1980.

## Desco boats for the west coast

FOR THE Florida boatbuilder Desco Marine, 1978 could be a big year on the United States west coast. This yard is best known as a series builder of standard-hull wooden and GRP shrimp boats. But in recent years it has been looking at other boat types and several other sections of the fishing industry.

In August 1977, the company appointed Charles J. "Chuck" Thompson of Astoria, Oregon as its first Pacific coast sales engineer. And as December came to a close, Desco already had eleven boats building for west coast owners.

Four of the boats are 75 ft (22.9 metre) long GRP vessels, and the other seven are 68 ft (20.7 m) GRP/wood boats.

Desco is now developing two new GRP designs for fishermen in the Pacific north-west. The 75 ft and the 68 ft boat will be modified for brine refrigeration systems, both flood and spray types. There will also be a whaleback version of the 75 ft hull with enclosed fore/cabin for the more severe weather encountered in the area.

According to Desco president Thomas J. Collins, these new versions will be multi-purpose boats modified to meet the particular fishing needs of individual buyers.

One version for the 75 ft hull will be as a salmon packer boat carrying fish from small catcher boats to shore plants. Desco packers will come equipped with refrigeration systems designed by Stone Refrigeration of Seattle. They will be able to carry more than 130 000 lb of salmon, and will also be fitted for shrimp and/or crabbing to meet the salmon season.

# SAFER NET WINS A GOLD MEDAL

AMERICAN fishing gear technologist, Richard L. McNeely has been awarded the Gold Medal of the US Department of Commerce, its highest honour.

Dick McNeely is supervisory research electronic engineer at the North-west and Alaska Center in Seattle of the National Marine Fisheries Service. The award is for "his leadership and major contributions to the fields of fishing gear technology, sampling system development, and conservation engineering."

Over five years, until August 1977, he worked from the NMFS South-west Center in California on the US project to try and prevent killing of porpoises in tuna purse seines.

"During this period," said Izadore Barrett, Director of the Center, "McNeely introduced new technology into the US tropical tuna fishery. He demonstrated the anti-torque cables to prevent net 'roll-ups'. He designed a large-volume net to reduce crowding without increasing the length, weight or cost over that of a standard purse seine."

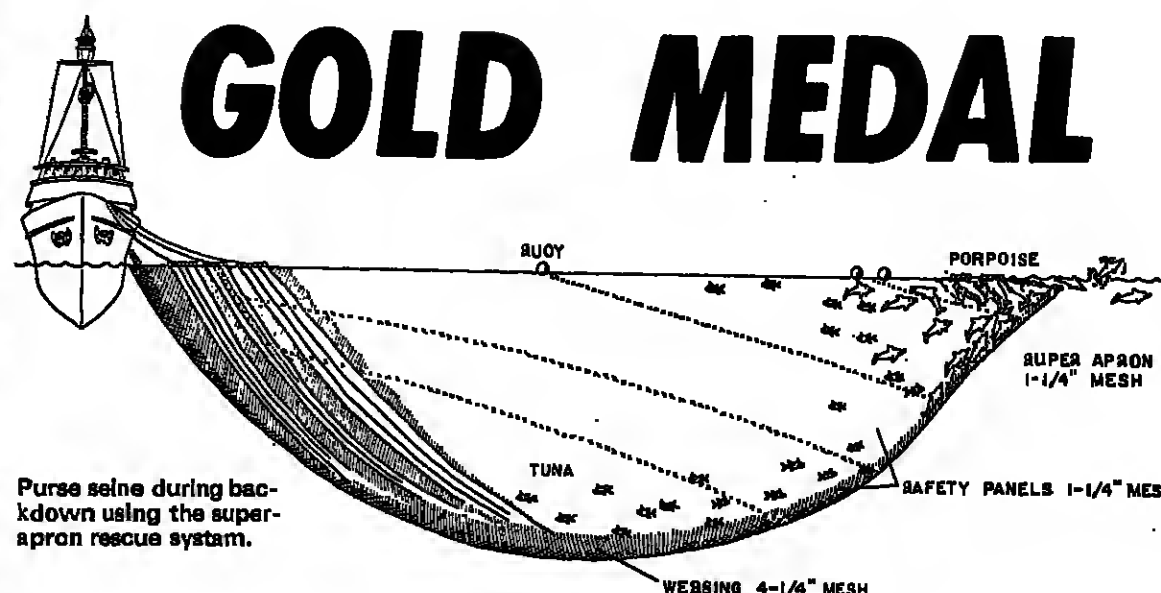
## Innovation

One of Dick McNeely's innovations is the "porpoise apron". This is an appendage of small-mesh webbing attached to the standard purse seine which forms a shallow protective "ledge" for porpoises. According to the NMFS, it has been effective in significantly reducing porpoise mortality.

Under his direction, the standard porpoise safety panel in the tuna net was deepened and strengthened to provide further protection against entanglement of the porpoises accidentally netted.

He also conceived the idea of using a small rubber raft in the "backdown" area of the net to manually assist porpoises over the net. Powerful small boats hold the net open so that it will not collapse and drown the captured porpoise.

Most recently, Dick McNeely has been working on the development of a balanced purse seine block suspension system. Success with this could be a boon to many tuna vessels



Purse seine during backdown using the super-apron rescue system.

## Industry debt to gear expert

which have been afflicted by gear malfunctions to the point of ruin.

McNeely's work was instigated by the requirements and the goals of the US Marine Mammal Protection Act of 1972. This called for the near-elimination of porpoise mortalities in tuna purse seining.

## Indebted

In 1971 an estimated 319 000 porpoises were killed during purse seining for yellowfin tuna in the eastern tropical Pacific. This had been cut down by 92 per cent, to 19 000 at the beginning of November.

"The tuna industry, as well as the environmental community, are greatly indebted to McNeely for his perseverance and success in dealing with an extremely complex, difficult and challenging assignment," said Director Barrett.



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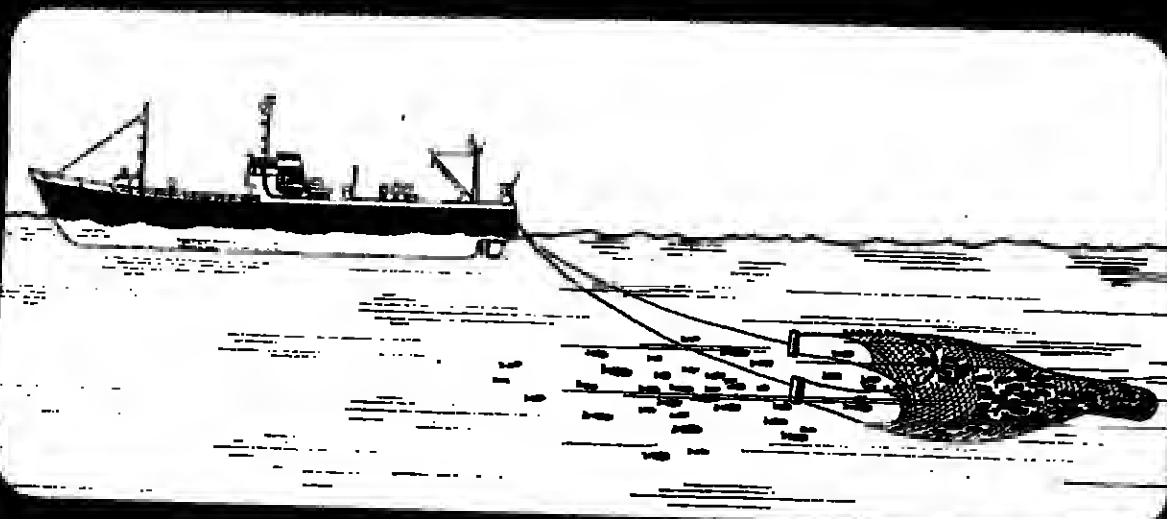
## Canadian approach pleases Russians

USSR Fisheries Minister Alexander Ishkov, on a recent visit to Canada, said his country was pleased with the "realistic approach" of the Canadian government towards foreign fishing inside 200-mile limits.

Ships of the USSR and several other distant water fishing countries have been allowed to work inside Canada's 200-mile economic zone subject to conservation controls. They are also limited in the species and the amount of fish they may catch.

Mr. Ishkov noted also that the propagation of salmon through hatcheries, spawning channels and other methods was a very important and promising area of Soviet-Canadian co-operation.

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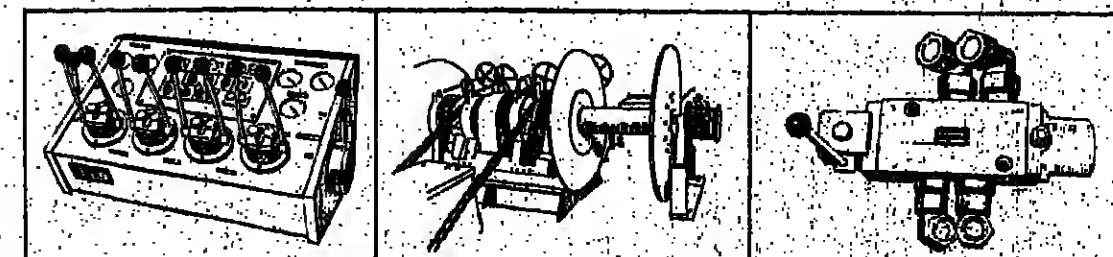
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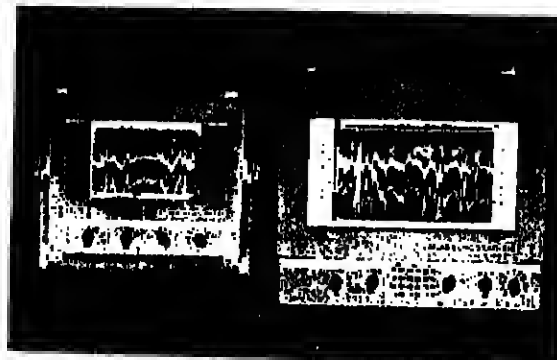
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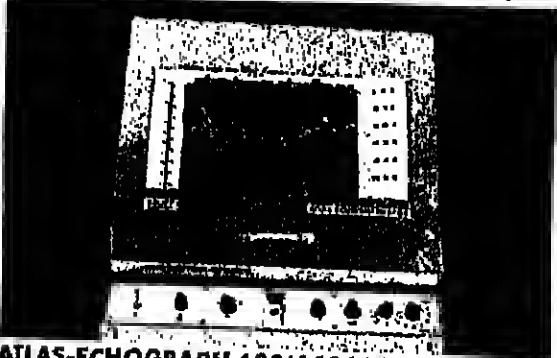


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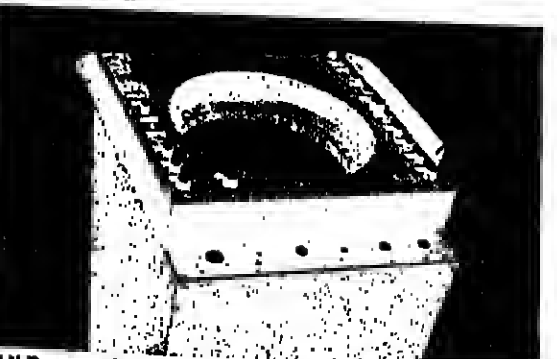
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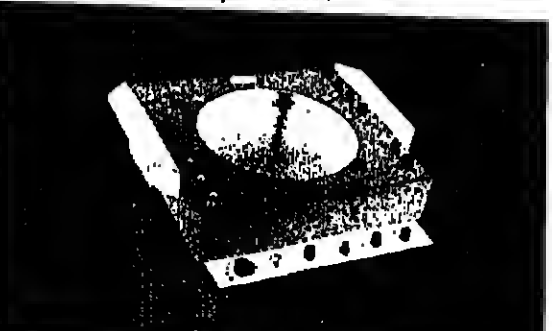
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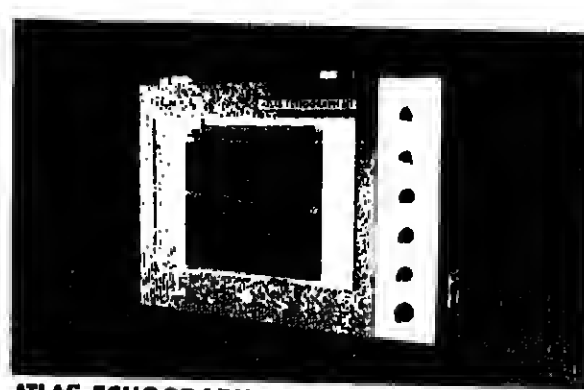
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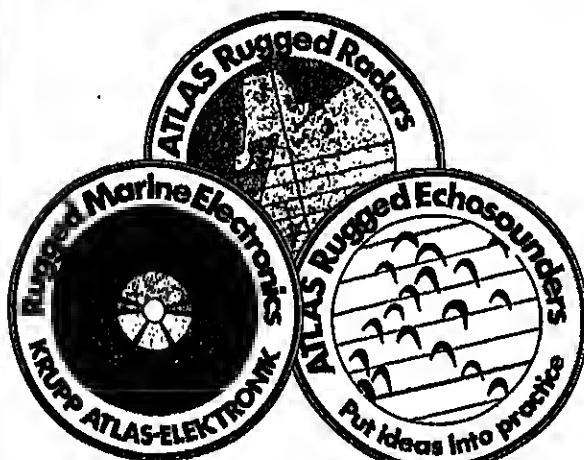
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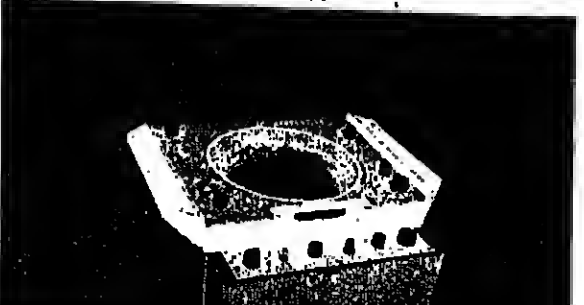
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# ABERDEEN GETS £4m. FISH MEAL PLANT

ABOUT £800 000 of the £4 million cost of a new fish meal factory in Aberdeen, Scotland, had to be spent on effluent treatment and odour abatement.

The factory, claimed to be the most modern in Europe, has a designed output of 200 metric tons of meal a day, from about 1000 tons of raw material. It is owned by the Caledonian Fish Meal Company (Aberdeen) Ltd., part of RHM Agriculture.

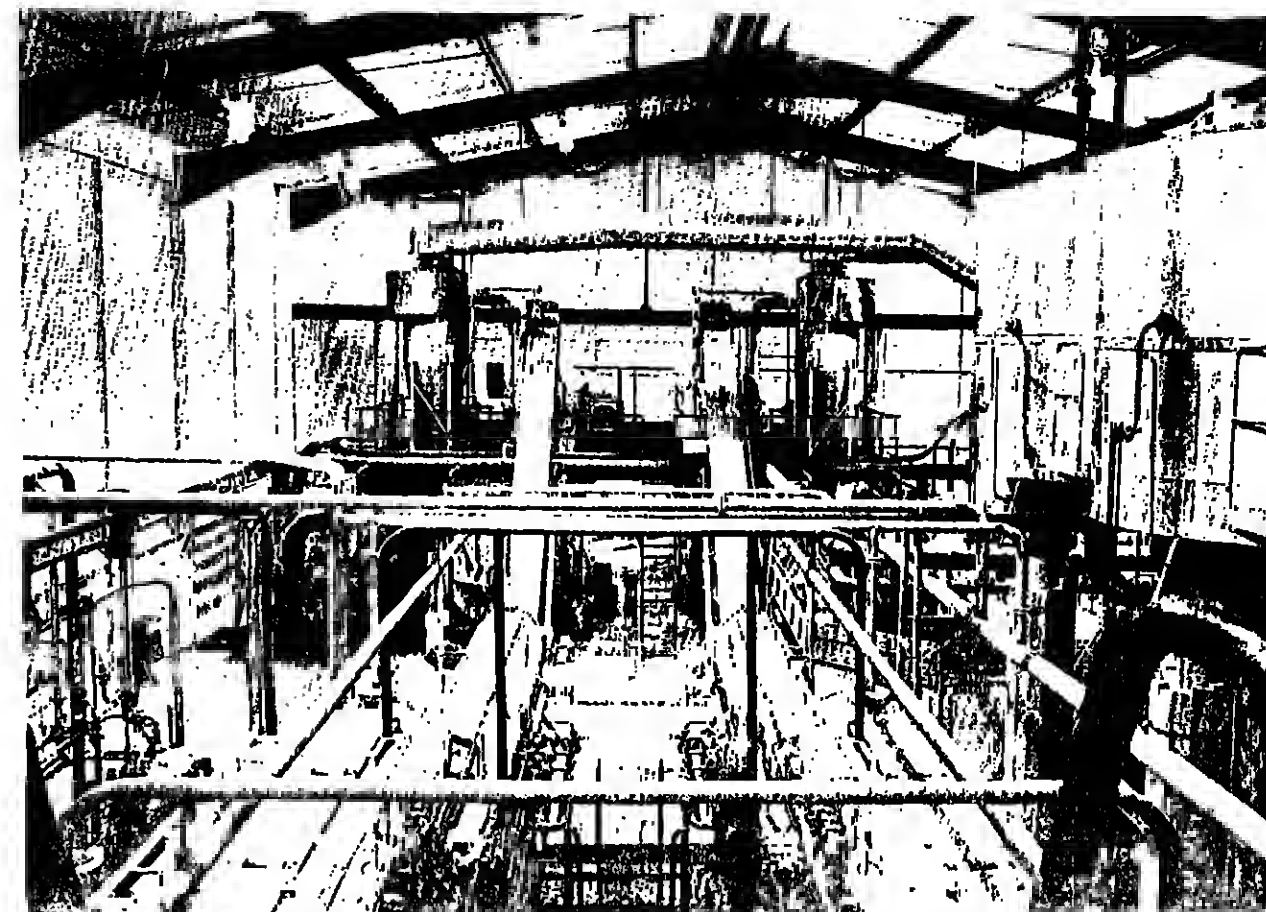
Made up of some 20 merchanting companies which have a substantial share of the UK's trade in feeding-stuffs and cereal seed, RHM Agriculture is in the Ranks Hovis McDougall group.

Two earlier meal factories in Aberdeen are replaced by the new factory whose reduction plants were supplied by Stord Burtz Industri A/S of Bergen. Turner Feed Milling (Ipswich) Ltd. supplied the plant in the dry meal process section. The factory boilers are by Robey of Lincoln.

Although, as in the earlier factories, much of the raw material will be waste fish and offal from the Aberdeen-based trawler industry there are two indications that other raw material may be sought. The one is the high capacity of the factory; and the other the fact that trawler ports such as Aberdeen may have a declining role in the future handling of Britain's fish catch.

Fish which may help keep this big plant working through the year include sprats, blue whiting and horse mackerel.

Raw materials arrive at the



Interior view of part of Europe's most modern fish meal factory, built by The Caledonian Fish Meal Company (Aberdeen) Ltd., part of RHM Agriculture. The factory cost £4 million and was opened by Mr. Hugh D. Brown MP, Under Secretary of State, Scottish Office.

factory into a separate, enclosed building. They are then moved by pump to fish storage tanks and then on to the wet process building, straight into totally-enclosed cooker feed hoppers.

All air from the 1800-ton capacity storage silos and the

boilers for incineration or they go for treatment by chemical scrubber when boiler demand is low.

Air from the intake building is vented to the atmosphere through an activated carbon bed so that no smell from the raw material can escape.

"The factory is designed to conform not only with regulations laid down in the Public Health (Scotland) Act and local bye-laws, but has been built to take into the proposed Protein Processing Order," said Mr. N. J. Foll, RHM Agriculture's production director. "In design and layout it is, therefore, several years ahead of present-day standards."

## Fire protection offer

IRELAND has been offered £20 million by the EEC to boost her fishery protection service. But the offer has been criticised by the Irish Fishermen's Organisation which says the money would be to carry out work too troublesome and expensive for the EEC to do itself.

The European Commission approved a

substantial aid programme towards building-up the Irish fisheries protection service, but the money would only be half of that needed.

The decision was based on an Irish plan and the money would be paid towards short-term leasing of two vessels and one aircraft and longer term purchase of five 1000-ton vessels and five twin-engined medium range aircraft.

## Norway worried over few arrests

NORWEGIAN patrol ships have come up against very few ships breaking regulations within the country's 200-mile economic zone. But instead of being happy about this the commander of the Coast Guard is worried.

Noting that the proportion of foreign ships found using gear with illegal mesh size has gone down from 70 to only two per cent, Rear-Admiral Robert Helseth says he is afraid that "a warning service has been established between vessels."

### Stricter

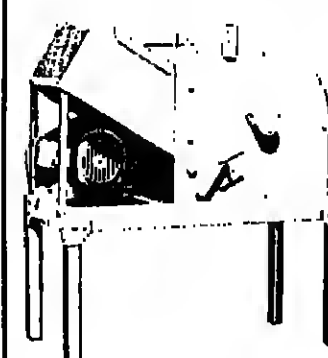
But he also conceded that foreign owners had become stricter in observing the rules, although there was an increasing tendency for Norwegian small-trawlers to fish in no-trawl areas.

Meanwhile in Oslo, Coast Guard Inspector, Commander Nils A. Tiltines, said instructions had been drawn up for dealing with foreign ships caught breaking Norwegian fishing laws. These would soon be in effect. In December a Danish trawler was escorted out of the Norwegian zone. Previously it would have only received a warning.

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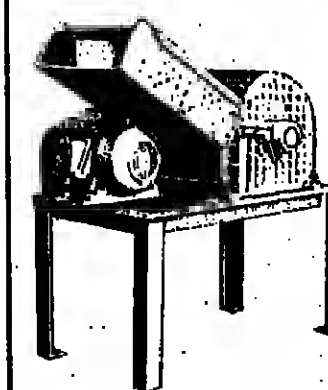
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# NEW ZEALAND LOOKS TO HER 200-MILE LIMITS

With New Zealand now in the 200-mile club, foreign fishing is being curbed. A need to open export markets for her primary products may lead to some "trade-off" of fish. But threat of strong action against Japanese fishing indicates what might happen if outsiders resist trade offers...

ON SEPTEMBER 26 last year, New Zealand joined the 200-mile fishing zone countries when her Parliament passed a Territorial Sea and Exclusive Economic Zone Act.

The territorial sea is now 12 nautical miles from baselines and the EEZ 200 miles. The Act also provides for calculations of total allowable catch (TAC) and the apportionment of that catch between domestic and foreign craft; and it covers the granting, reviewing, variation and cancellation of fishing licences.

The government is empowered to prescribe interim or transitional measures for management of resources within the EEZ. It quickly acted to close certain areas heavily used by foreign vessels. But, when the closures were applied in October, Auckland-based snapper fishermen argued forcefully with Minister of Fisheries, Mr. J. B. Bolger, that they did not protect their valuable grounds.

This led to a further restriction covering extensive areas on the north-west coast of the North Island, effective from November 25.

Foreign fishing pressure off New Zealand has grown rapidly over recent years.

But successive governments, no doubt on the advice of the Ministry of Agriculture and Fisheries and other government agencies, seem to have been very reluctant to take any positive action to prevent the build-up of foreign fishing activities or restrict the use of mesh illegal for New Zealand fishermen.

### Ports available

Port facilities have been made freely available to foreign vessels and this concession has facilitated the operations of smaller craft, mainly Japanese squid and long line tuna vessels.

Vessels of up to 4500 tons have been fishing on New Zealand inshore grounds and the local industry has pointed out that ships of this size are not permitted to fish on the inshore fishing grounds of their own country.

These uncontrolled foreign fishing activities have, it is generally agreed by the local industry and research scientists, seriously affected some New Zealand long lived species of fish and some trowl grounds such as the 50-mile wide Canterbury Shelf.

As far back as 1969, the annual report of the Fishing Industry Board drew government's attention to the decline in landings in that area. Landings of some popular species have declined by over 50 per cent.

The Board in successive reports backed by industry organisations suggested action to prevent the build-up of foreign fishing and pointed out the danger in allowing its uncontrolled expansion in New Zealand waters.



New Zealand Premier Muldoon... strong statements

Departmental inaction seemed to be based on concern that there was no legal way of preventing such a build-up, that action to restrict the use of ports would offend nations with whom New Zealand traded in agricultural products, that there were some benefits to New Zealand through the provisioning of such vessels, and that New Zealand would place its faith in the UN Law of the Sea Conference making a decision.

Arguments that the main foreign fishing nations were taking advantage of the protracted Law of the Sea negotiations to build up their fishing and research activities and so establish claims to "habitual" rights were ignored by government.

No official pressure to have foreign trawlers conform to New Zealand legal mesh sizes was exerted; no discussions were even undertaken until late in 1976 when New Zealand's attitude began to stiffen towards Japan. At that belated stage, after more than ten years of fishing alongside New Zealand trawlers, using mesh sizes half the New Zealand legal size, Japan "volunteered" to adopt the New Zealand mesh sizes.

In mid-November it was reported that a number of Russian trawlers had withdrawn from the NZ fishing area because their mesh sizes did not conform to local regulations.

The attitude of New Zealand to Japan in particular has taken a dramatic turn following the government's adoption of a hard line on the stabilising of conditions for

the entry of New Zealand's agricultural products into Japan.

Japanese trading policies have come in for criticism from other trading countries recently, from the EEC, the USA and Australia. In New Zealand's case however the Government has taken the opportunity to use the 200-mile EEZ as a bargaining weapon. New Zealand has now entered what the news media have named the "Beef For Fish Deal."

New Zealand depends on a high level of external trade and has needed to establish alternative markets to compensate for the changes brought about by Britain's entry into the EEC.

Japan has a restrictive and highly protective policy in regard to the importation of beef and dairy products, a policy adopted by many industrial nations who still want to sell their manufactured products to primary producing nations like New Zealand.

### High prices

In Japan this policy has resulted in very high domestic prices for meat and dairy products and has attracted internal criticism. This has been illustrated recently in a book condemning the 1975 Beef Stabilisation Scheme under which the benefits of cheaper imported beef prices are not passed on to the consumers.

The Japanese consumer pays five times the price for butter and six to ten times the price for meat that the New Zealand consumer pays. This is caused by the imposition of levies in Japan.

The change in New Zealand's attitude is exemplified by the very strong statements of the New Zealand Prime Minister, Mr. R. D. Muldoon, who has said that Japan will not be granted licences to fish in the New Zealand 200-mile zone unless there is a very significant change in her trading attitude.

The New Zealand Minister of Foreign Affairs, Overseas Trade, and Deputy Prime Minister, Mr. B. E. Talboys, recently held discussions in Japan with the Japanese Prime Minister and other cabinet ministers. In these discussions Mr. Talboys made New Zealand's firm attitude very clear.



A catch is landed for processing at Sandford's Fish Factory, Auckland

Mr. Muldoon himself had spoken personally with the Japanese Prime Minister and in hard-hitting speeches at home and abroad had left no doubts that New Zealand will maintain her stand on no fishing rights for Japan without some trading concessions.

This stand follows over 15 years of exasperation with Japanese trade barriers against New Zealand while access for Japanese exports to the New Zealand market has continuously improved.

There have been frank industry-to-industry exchanges at the yearly meetings of the Japan-New Zealand Businessmen's Council on the barriers erected by Japan against New Zealand's beef, dairy products, timber, apples and fish.

In opening the conference in October last at Nelson, Mr. Muldoon pointed out that in addition to the tariff and non-tariff trade barriers, the Japanese methods of operation gave no assurance of continuity or stability in regard to imports.

On the other hand, New Zealand did administer her control in a manner which permitted the development of long-term stable relationships which favoured Japanese exports such as C.K.D. motor vehicles.

Japan is New Zealand's second largest export market, taking 14 per cent of NZ exports, though these represent only one per cent of Japanese imports.

It is the second largest market for New Zealand cheese, butter and mutton and the fourth largest for milk powder. In beef, however, it is less important than Malta (with less than half-a-million people).

While government spokesmen say the issues are wider than "Beef For Fish", there is some concern among industry members on the use of fishing rights as a bargaining weapon in the interests of other primary products.

Few people disagree with a general "get tough" line with Japan on over-all trading relations and most people support the Prime Minister's initiative.

The misgivings about using fishing rights as an incentive to buy NZ agricultural products is based mainly on the principle that any benefits accruing to New Zealand from the establishment of the 200-mile zone should be used primarily for the benefit of the domestic fishing industry.

Many fishing industry members contrast the "soft" attitude of successive governments to the level of Japanese fishing activities, the use of under-size mesh, and the tariff and non-tariff restrictions of certain NZ fish imports into Japan, with the present "tough" attitude.

Some go further and point out that the "soft" attitude was adopted by government in the interests of agriculture and not in the interests of fishing. The present "tough" attitude is again mainly in the interests of agriculture and not in the interest of fishing.

Fishing industry spokes-

### From a Special Correspondent

men have pointed out that Japan is New Zealand's third most important customer for NZ fish. For trawl fish, Japan is a close second to Australia and could be New Zealand's biggest customer in the future.

In his statements on the likelihood that Japan will not be granted fishing rights, Mr. Muldoon has also said that Russia will be welcomed and the government has already announced that Russia and South Korea are the first countries invited to hold fishing discussions in New Zealand.

### Suspicious

Fishing industry reaction to Russian participation within the NZ zone is guarded and suspicious.

Spokesmen have recalled a lack of co-operation by the Russians in providing data on their catches, research, mesh sizes, and their ruthless fishing in competition with the domestic industry.

The industry also points out that Russia does not offer any rewarding market prospects for New Zealand fish now or

in the foreseeable future. On the other hand, Japan is paying very good prices and showing interest in species that New Zealand can catch but which in the past have been difficult to sell.

The Prime Minister has pointed out that Russia took \$110m worth of New Zealand exports in the last trading year against \$3m worth of Russian goods imported by New Zealand. (New Zealand imported \$347m worth and exported \$391.6m worth). Mr. Muldoon also pointed out that many other countries with established ties with New Zealand would like to fish within the NZ zone.

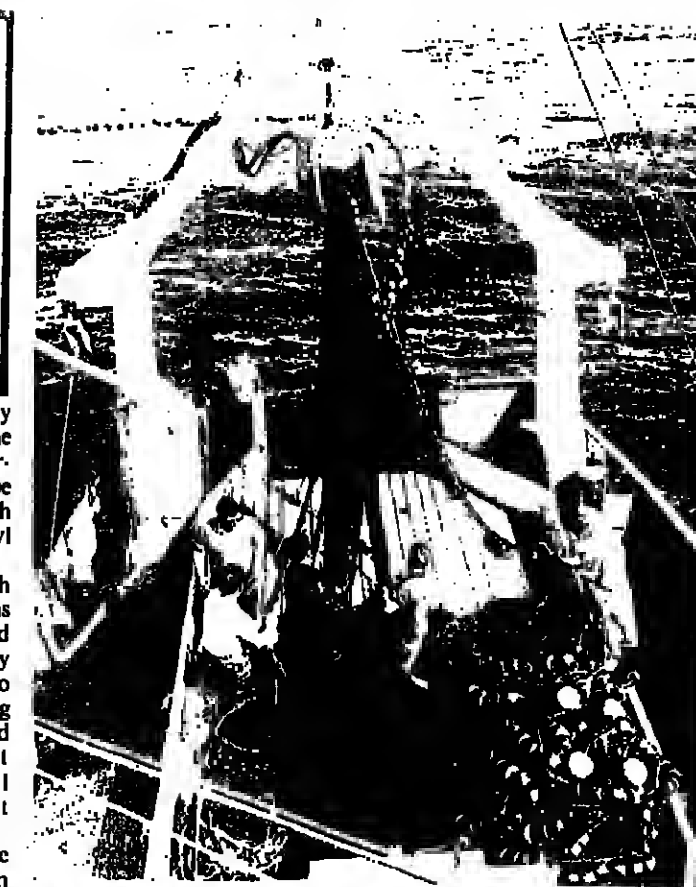
One of the main problems in introducing "resource trading" is that the fishing licences will be granted for benefits for industries other than fishing.

The industry in New Zealand is concerned that the Ministry of Agriculture and Fisheries has a conflict of interests between what is good for the established agricultural industries and what is good for the developing fishing industry. The appointment of Mr. Bolger as a separate Minister of Fisheries, may help the fishing industry by providing a separate advocate for fishing in the cabinet.

The threatened exclusion of the Japanese from the fishing



Prima fish being filleted and packed in a modern factory for export



The purse seine netter W. J. Scott shooting her net

## Fish container for all seasons

THE HANDLING and packing requirements of the fishing industry vary so much that it is very difficult to provide a single type of container suitable for all uses.

In an attempt to find a solution to the problem, the Swedish company, Packabox AB, has developed the Pellywell system to streamline handling and distribution from boat to retail shop.

This system evolved in consultation with users. Now well established in Scandinavian countries, it is being tried out in a pilot scheme in Britain by the wholesale fish packing company, Hillsmoor of Luton.

The basis of the system is the combination of a metal wire basket and a plastic or cardboard insert. This allows returnable and non-returnable packing to be combined. The two components can be separated in the handling chain at the time when it is most practicable.

The wire basket gives the packaging the necessary stability, but can be separated from the insert and returned when no longer needed. The basket bears the full load of the package of fish and is suitable for shipboard use.

It is made from galvanised and epoxy-coated steel wire and is safe to handle; also it weighs considerably less than a wooden box of similar capacity.

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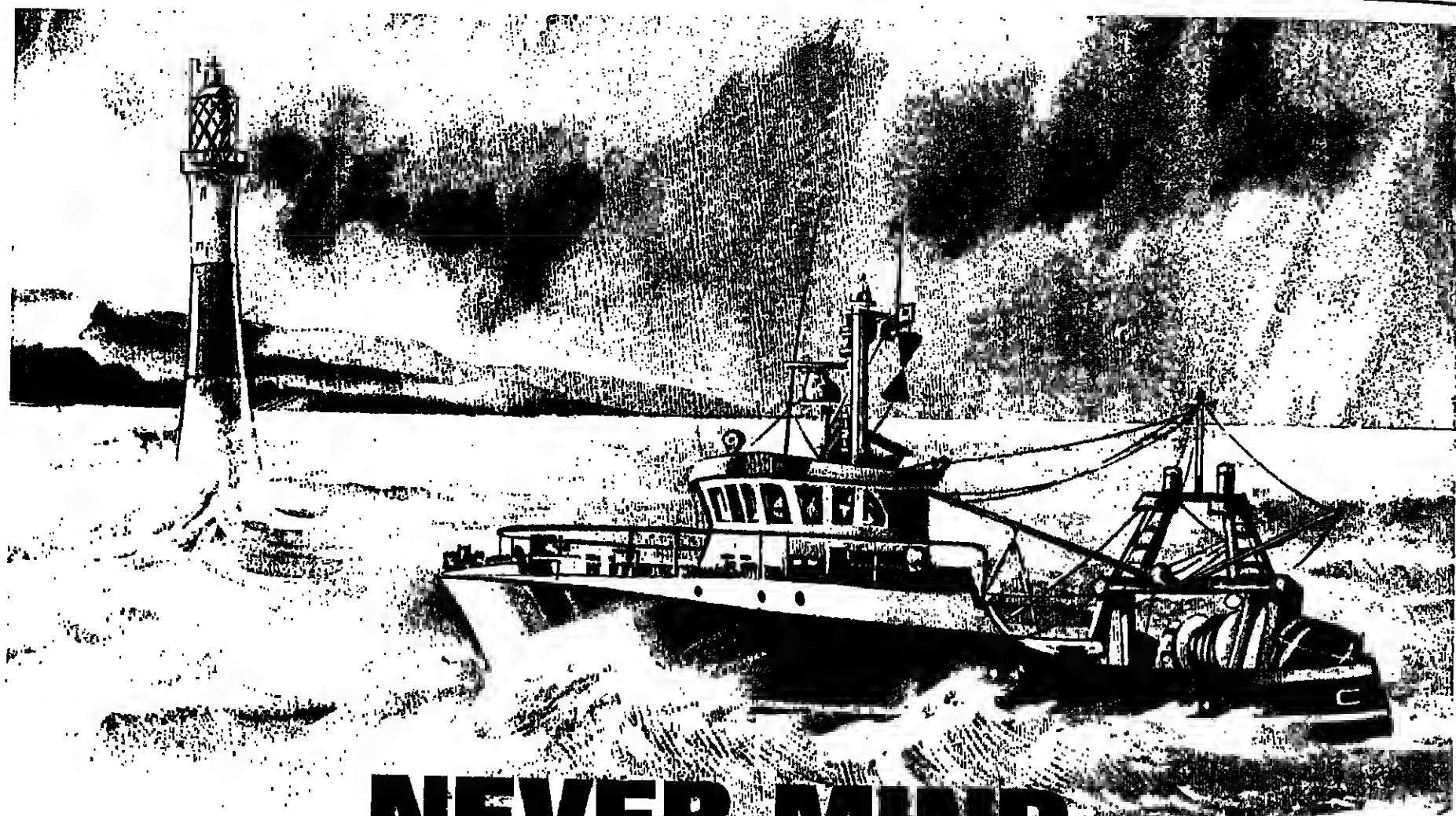
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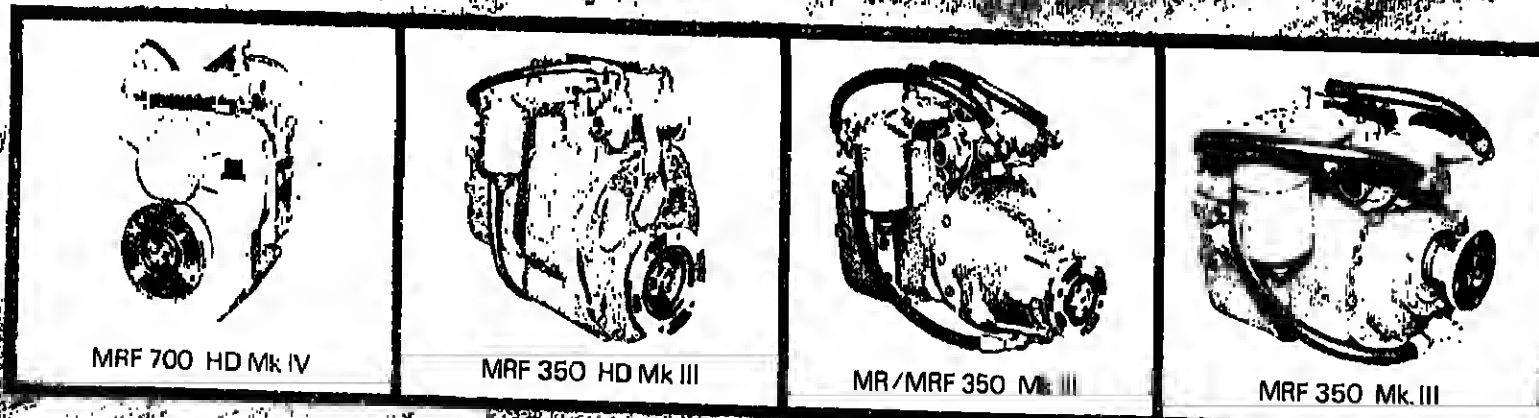
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## No fight over SA 200-mile limits

SOUTH AFRICA went out to a 200-mile fishing limit on November 1 without disputes.

Four warships, three fishery administration craft and military aircraft mounted intensive patrols over the trawl grounds. They found only South African fishing boats. Taiwanese tuna long liners and Japanese trawlers.

The rest — Russians, Bulgarians, Poles, Cubans, Spanish, Portuguese, Israelis, Germans — had accepted South Africa's declaration and had moved out by November 1.

### Tuna rights

The Japanese have negotiated fishing rights in South African waters. South Africans do not exploit the migratory tuna and agreed to allow the Taiwanese to continue fishing.

Patrols are being maintained, particularly by Maritime Air Command Shackletons and Albatross. The SA Navy always has a number of ships at sea. They may be despatched at any time and at short notice to intercept suspected illegal trawlers.

In addition, all South African trawlers have been enlisted as reporting ships with standing instructions for notifying Commander, Naval Operations if they see a foreign trawler.

## Norway cod quota cut for trawler fleet

THE 1978 cod quota for Norwegian trawlers has been set at 195,000 tons, compared with 180,000 tons last year.

Norway's small fleet of factory trawlers have each received an allocation of 2480 tons round weight per vessel.

This represents about 1235 tons of skin-on fillets.

Salifish and roundfish trawlers larger than 400 gross tons will each be allowed to take 2195 tons round weight, equal to about 1568 tons fresh roundfrozen weight.



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## VOLVO PENTA REVIVES OLD FAITHFUL



VOLVO PENTA has gone back to producing perhaps the best known of its outboard engines — the old two-stroke, two-cylinder U22.

This reliable and hard-wearing engine has been known since the 1930s, and Volvo Penta has been flooding that there is a significant demand for it still, particularly from developing countries in Africa and South America.

The engine is uncomplicated in design and all parts can be reached easily for maintenance. It develops 10 hp and has a relatively low speed for an outboard of 2800 to 3200 rpm. This, says Volvo Penta, gives it a number of advantages, including low fuel consumption and excellent low-speed pulling power.

According to Volvo Penta, the U22 can propel a 10 to 15 metre boat with a ten-ton load, and a twin installation can power much larger boats with loads of up to 20 tons.

Mr. A. Labon, head of FAO's Fishery Division, with the first of the new series of U2 outboard engines.

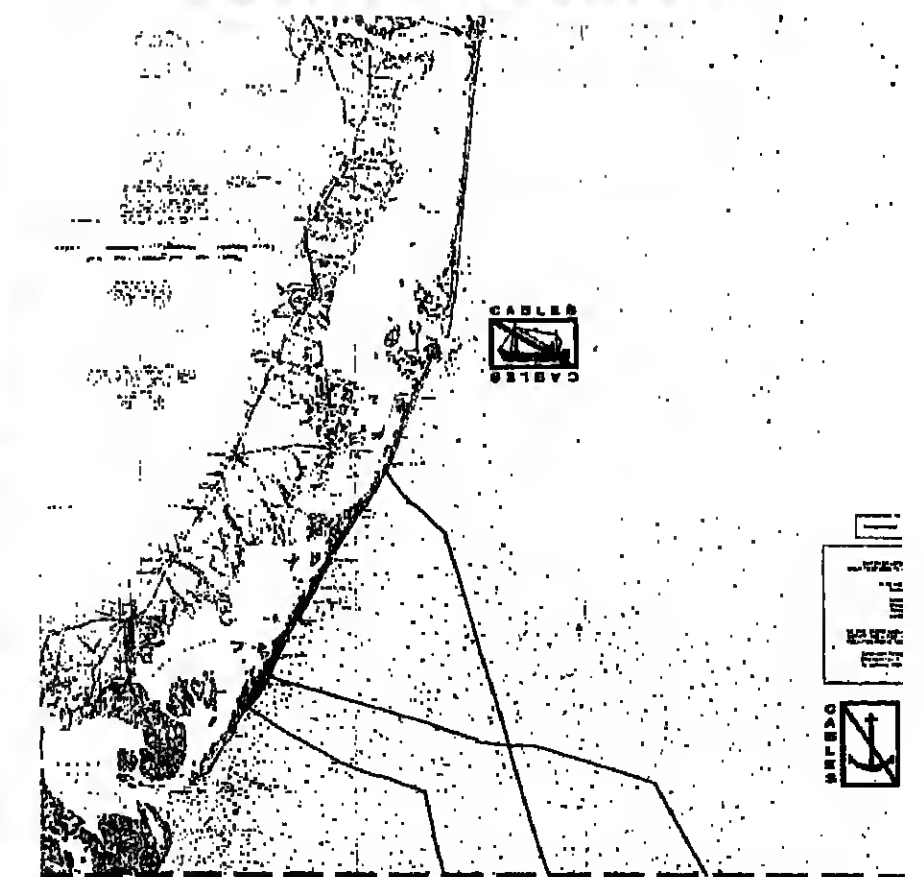
"As a comparison," says this maker of a wide range of excellent modern outboards, "the engines of today, designed primarily for leisure use and high-speed lightweight boats, would require twice the output to carry out the same amount of work."

With a capacity of 345cc, the U22 has 60mm bore and 61mm stroke. Ignition is by magneto and starting by the old cord. Steering is by tiller and controls consist of lever, throttle and magneto. Total weight of the engine is 45 kg.

The first engine of the new series was presented recently to the Department of Fisheries of FAO.

Thinking Volvo Penta, Mr. A. Labon, who heads the Fishery Industries Division, expressed his admiration of the U22. He saw the decision to re-introduce this engine as a symbol of continued co-operation on the lines of the "Somalia project," in which Volvo Penta has set up boat building and servicing in the user company.

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# ICELAND BUYS THREE NEW SHIPS

ICELAND'S fishing fleet is being further strengthened by the addition of three new ships from the Oerskov yard in Frederikshavn, Denmark. The first of these ships was recently delivered.

These 54-metre long vessels will be among the largest in the Icelandic fleet. They are designed for trawling and purse seining. Each has a beam of 9.50 m and a depth moulded to the main deck of 4.90 m. Dead-weight capacity is 1040 tons.

Hulls of the ships were actually built by the Karlstad yard in Sweden, and they have been brought to the repair section of the Oerskov yard for completion.

The main engine is a Wichmann diesel type 7AX which develops 2100hp at 375 rpm and drives directly to the propeller, which is fitted with a nozzle. Auxiliary power is provided by two Volvo Penta TMD AK diesels of 220 hp, driving alternators.

Karmøy of Norway supplied the main combination trawl and purse seine winch, whose two drums can each hold 1600 m of two-inch wire. The net drum, also by Karmøy, has a pull of 25 tons. Three ABAS power blocks are carried, two of

them mounted on hydraulic cranes. Other hydraulically powered equipment in the ships includes a 14-inch fish pump; and Schottel bow and stern thrusters of 400 hp each.

Each ship has three fish holds, which can also be used as RSW tanks. All refrigeration plant is by Finsam.

The ships are shelterdeckers, each with accommodation for 16 crew.

Wheelhouse equipment includes Furuno radar, Kelvin Hughes fish finders, Simrad sonar and Trawl Eye.

The first ship is for Runolfur Halfredsson of Akranes.

Oerskovs has just completed its 100th ship after 19 years in business.

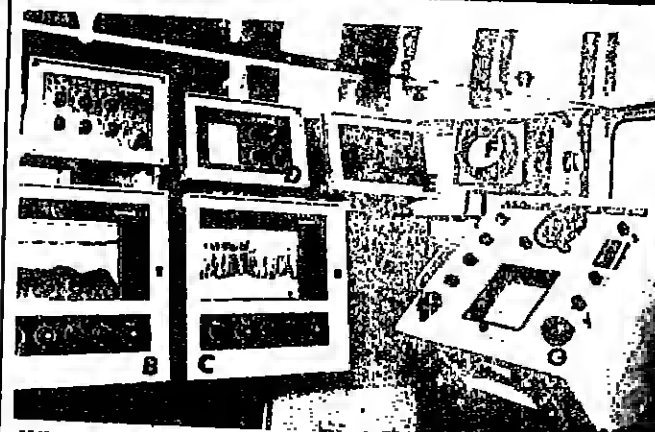


First of three trawlers nearing completion at the Frederikshavn yard.

## Norway's Fisheries Bank gives £27m. to maintain employment

NORWAY'S State Fisheries Bank was given 270 million kroner (£27 million) by the government in 1977 specially earmarked to help maintain employment at shipyards. With this money, the Bank arranged financing for 57 new vessels and rebuilding of 21 existing boats.

Mr. Arnulf Midtgaard, the Bank's Director, said last month that he was unhappy that the problem of employment at yards should be the determining factor in placing orders for fishing vessels. From a purely fisheries point of view, the Bank would have preferred a different order of priorities.



WITH HER sister ship *Cassio*, the 68.3 metre long British freezer stern trawler *Othello* is to work off the coast of Australia in a joint venture involving her owners, British United Trawlers, and a local company.

The *Othello* was the first of the ships to go out from her home port of Hull. The picture above shows the array of Simrad instruments she will use for fish finding in Australian waters.

Marked A in the picture is the Simrad 1° Trawl Watch, B and C the EQ sounders, D the Inter-switch unit for transducer selection and 10kW transmitter (operable with either sounder), E the MC Scale Expansion unit, F the CM sonar scope, and G the SQ4 sonar (the first of this model, featuring both 90 deg. tilt and retractable transducer).

## SCOTTISH BOSS SAYS: 'SCRAP 24m. INSHORE BOATS'



AN EEC cash incentive scheme for scrapping vessels over 24m. (79 ft.) should be extended to inshore boats.

This view was put forward at a meeting in Brussels of the EEC's Joint Committee on Social Problems by David Aitchison, chief-executive of the Scottish Fishermen's Federation.

### Argued

At present the pay-out is scheduled at 300 units of account per gross ton but Mr. Aitchison argued that a higher scale of payment would be necessary to make it attractive to inshore boats.

The scheme is aimed at overcoming the problems of nations which had built up an over-capacity of fishing effort.

# Coho 'No threat' to Atlantic salmon

DOES THE introduction of an alien salmon species, specifically the coho (*Oncorhynchus kisutch*), under stringent conditions constitute a threat to the Atlantic salmon (*Salmo salar*) in Britain?

Not at all, says Dr. R. D. Needham of Unilever Research, the company doing the importing. Talking to participants in the annual conference in London of the Salmon and Trout Association, he argued that there was no danger of this spotted immigrant ousting their favourite prey.

He explained his company's research into the economics of farming Atlantic salmon had shown that this species would remain a high-priced luxury. In no way would its estimated production of 3000 tons from all sources, wild and farmed, make any inroads into UK imports of canned products from Pacific salmon, now running at 25000 tons a year.

On the aquaculture tests, he said that not only were disease-free eggs available but the coho was immune to the many viruses to which other salmonids were

susceptible. The eggs imported by Unilever earlier in 1977 were subject to controls imposed under the Disease of Fish Act. Escape-proof buildings and effluent treated with caustic soda would ensure that neither fish nor pathogens were likely to find their way into Scottish rivers.

### Little success

On the fear of self-sustaining populations by escapees from future coho farms, Dr. Newman pointed to the various unsuccessful attempts over the past 100 years to introduce Pacific salmon into Europe and other parts of the world. Only in New Zealand had there been any success.

But even a very remote possibility was too much for Dr. Wilfred Carter of the International Atlantic Salmon Foundation of North America. He said that biologists, even when engaged on pure research, should not play God by introducing alien species. He reminded his audience of the rabbit in Australia.

Dr. Carter challenged the concept of "disease-free" (asking a scientist to prove a negative) claiming that no technique existed for a general sterilisation of a living organism that would not result in the death of that organism.

Perhaps his best point he titled the "Iceberg Phenomenon"; that is, if facilities are accorded to a responsible firm like Unilever, it will be difficult to refuse similar assistance to companies that may prove less reliable.

The picture drawn by M. Jacques Arrignon of the position in north-west France, where coho farming started in 1973, was far from clear. There had been escapes, some massive; occasional adults had been caught in the rivers; but there was no evidence yet of self-sustaining populations. Indeed, present researches indicate that the coho has been unable to colonise the Dnieper watershed and the interaction of the stragglers with the indigenous brown and sea trout and the few Atlantic salmon has not been sufficiently investigated to form any firm conclusions.

## SOCKEYE TOTALS 6.5m.

THE NUMBER of sockeye salmon returning to the Fraser River and its tributaries to spawn in 1978 should total 6.5 million, according to estimates of the International Pacific Salmon Fisheries Commission.

While this is about 2.1 million below the 1973 cycle-year figure, it is well above the 1977 estimated total of 5.8 million.

Mr. John Roos, an IPSC manager, said the Commission wanted an escapement of 2.35 million fish for spawning this year.

The catch in Convention waters is estimated at 2.8 million sockeye, divided evenly between Canadian and US fishermen.

In 1977, 3.7 million sockeye were caught, with Canadian fishermen taking about 1.97 million

# NORWAY CAN CARRY ON FISHING

ON A four-day visit to Norway in December, Iceland's Foreign Minister Einarr Agússon discussed with Law of the Sea Minister Jens Evensen the question of the median line between Iceland and Jan Mayen.

There has been some dispute about this as Iceland is reluctant to accept that Jan Mayen has its own continental shelf. She claims that only islands with permanent population have a shelf, and Jan Mayen is peopled only by weathermen. But at the Oslo talks it was agreed that the final determination of the median line was not an urgent matter.

"I know," said Mr. Agússon, speaking at a press conference, "that this question, like all questions concerning our two countries, will be amicably settled."

Mr. Agússon added that the present government in Iceland had no intention of terminating the fisheries agreement with Norway. He warned, however, that a new Parliament would be elected in June 1978, and "a change of government might mean a change of policy."

The fisheries agreement between Iceland and Norway gives Norwegian fishermen certain rights in Icelandic waters. The Foreign Minister said that in his talks with Norwegian government ministers he had expressed no wish that Iceland should be given reciprocal rights within the Norwegian 200-mile zone. But Iceland did want closer co-operation in protection of fish stocks.

The EEC had been offered an agreement on fish conservation but no fishing rights



in Icelandic waters, said Mr. Agússon. Replying to a question, he said that at present he could not envisage any prospect that EEC countries would be allowed to resume fishing in the Icelandic zone, even on a reciprocal basis.

## Whales combine with the Seals

LAST MONTH the Seals' Research Division of the Institute for Marine Environmental Research combined with the Whale Research Unit to form the British Natural Environment Research Council's Sea Mammal Research Unit.

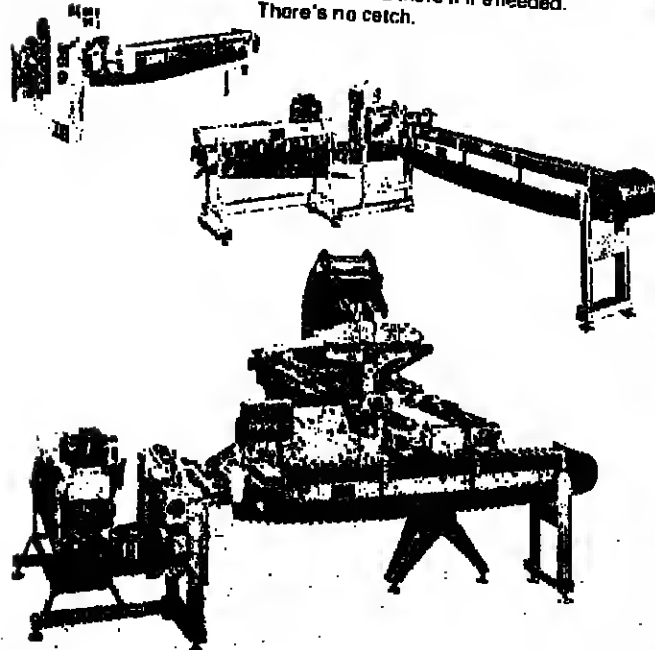
Although it is not a part of the British Antarctic Survey, the new unit will be housed in the same building in Cambridge, England. And it will be directed by BAS director, Dr. R. M. Laws. Dr. C. F. Spomers will be officer-in-charge of the unit.

The address of the Sea Mammal Research Unit is c/o British Antarctic Survey, Madingley Rd., Cambridge CB3 0ET, England.



# What's the catch?

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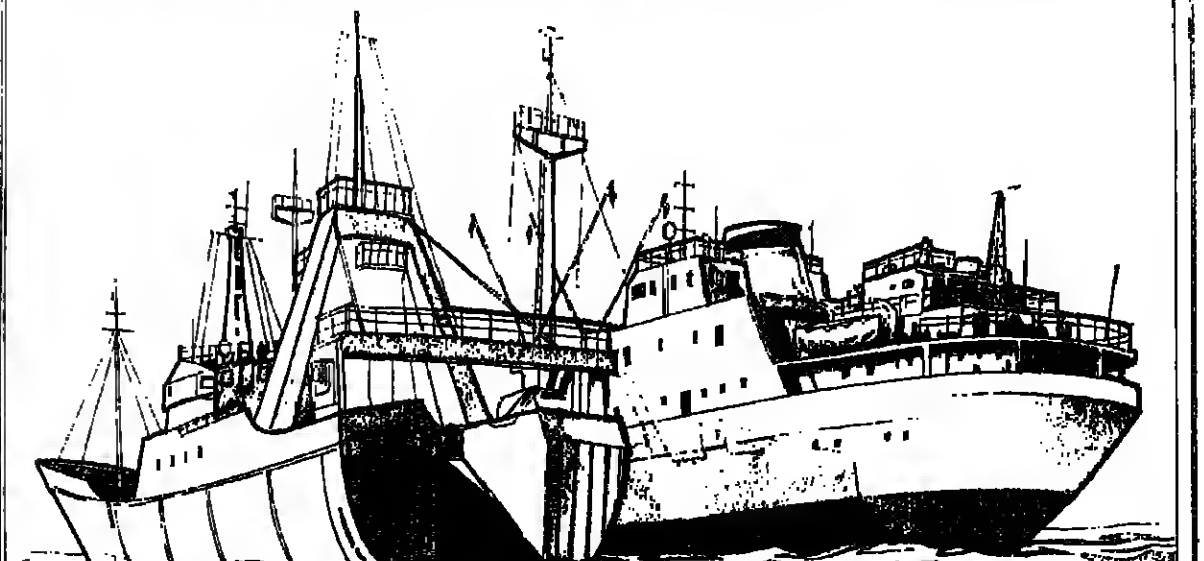
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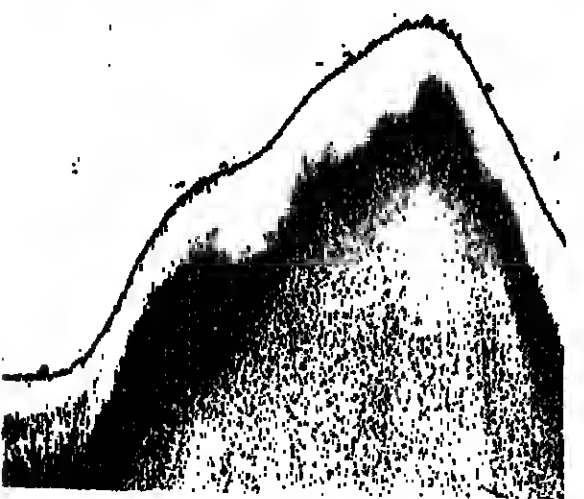
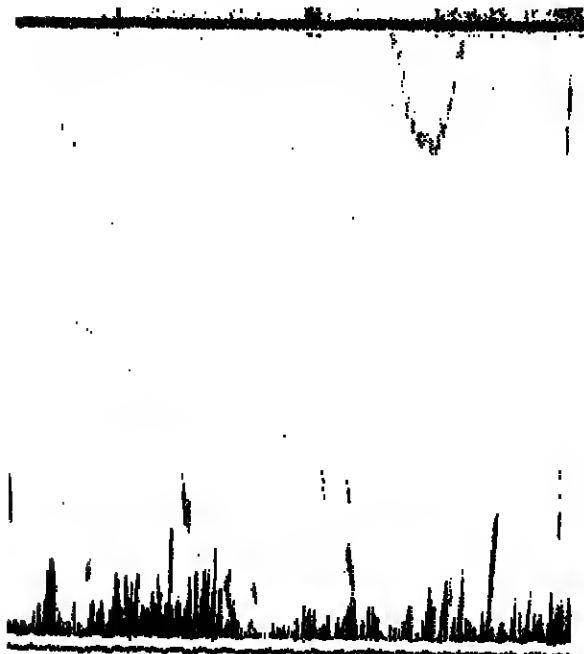
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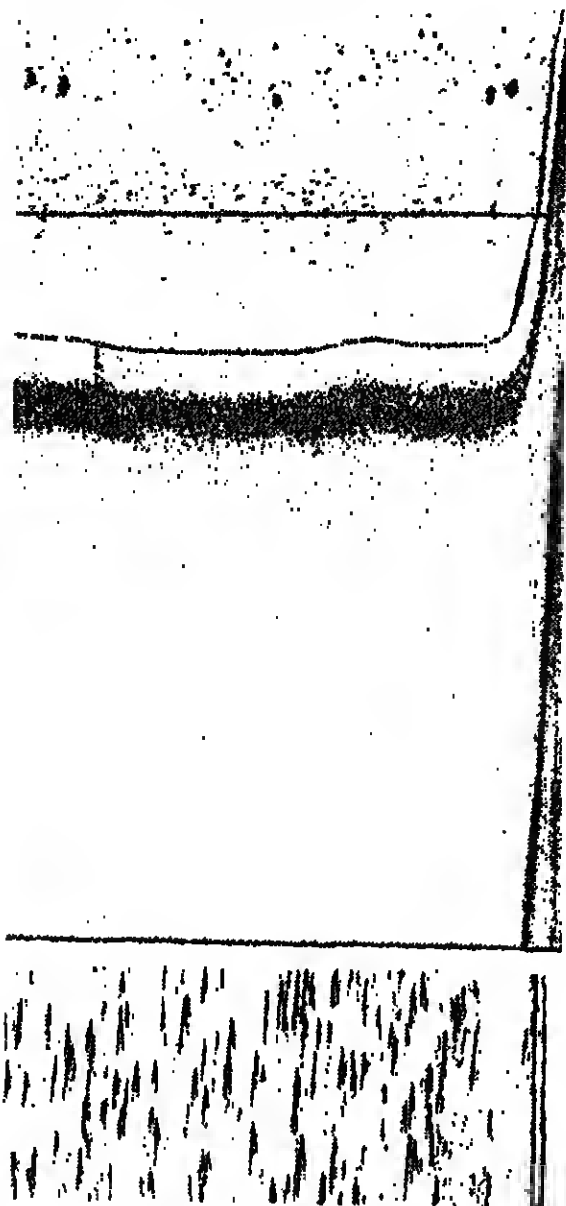
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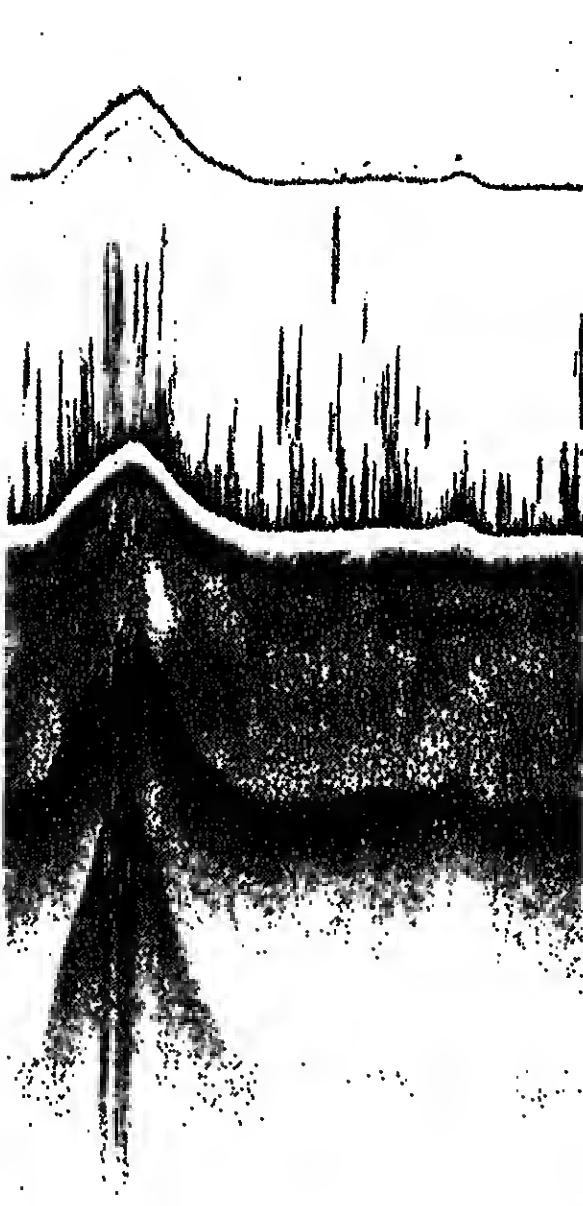
Recording is bottom locked in 100 m range. Range of expansion is 3 m. Displayed from top of paper and over 1/2 of paper width.



The recording here is in the pelagic mode and range is 500 m. Range of expansion is 3 m. Flat display on 1/5 of paper width. Observe the marker line which shows lower limit of chosen expanded range.



Recording is bottom locked in the 500 m range. It follows the bottom contour. Range of expansion 3 m which is written over 1/5 of total paper width.



NEW PHOTO

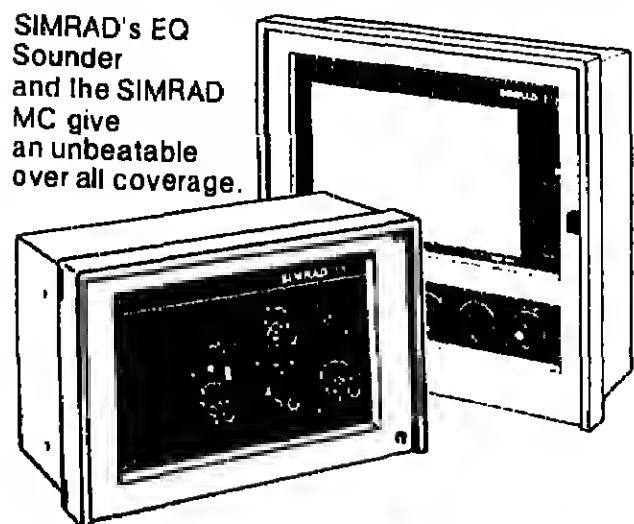
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## DAVID WATKINS REPORTS ON A DECLINING TRADITIONAL DELICACY

EVERY SUMMER, a small fleet of long line boats sails from the tiny fishing island of Tjörn, off the Swedish coast about 64 km from Gothenburg, for the Norwegian coast and the Shetland Islands. There they line fish for ling, which is popular with the Swedish people as "spillanga." The fish is more usually known as "langu," and the special product processed from it is called "lutfisk."

The ling is a large fish and can grow as long as 150cm. It is greyish brown in colour with a white stomach, and it is usually found about 200 metres down in the sea.

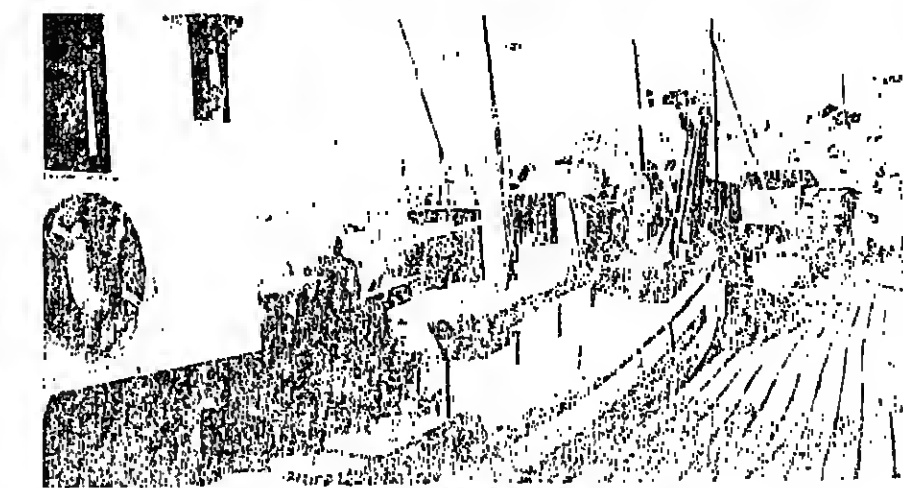
In Sweden, it is eaten on special occasions, sometimes over Easter but mainly at Christmas when it becomes almost a national dish. The tradition is to eat the fish after it has melted butter put on it, as well as sauces of various kinds — and this is followed by a large helping of thick rice.

### Declining

Unfortunately for the tradition, the number of boats going out for ling in the season has been steadily declining. Twenty years ago there were about 50 of them, but they have dwindled down to only about half-a-dozen.

One reason for this is that Tjörn, like so many other fishing islands in the Scandinavian countries, is turning out less and less fishermen. The seafaring life appeals much less to the younger generation than it did to their fathers and grandfathers. Although the ling fishing may take place in the calmer months of the summer,

accidents still happen. In May 1976, one of the boats, the Camilla, sank off Shetland with 30 tons of ling aboard, but unfortunately her crew was rescued by helicopter. In the 19th century, the hardy Tjörn islanders built



Longline boats alongside at Tjörn

## TERRITORIAL LIMITS VIOLATIONS

SRI LANKA'S navy has stepped up action to arrest any foreign trawler fishing within her waters.

Six Taiwanese trawlers operating eight miles off the northern coast provoked some embarrassing questions from members of Sri Lanka's National State Assembly representing the island's northern areas.

"In addition to violating the conditions of our territorial limits, these trawlers were destroying the nets of the local fishermen with their fast mechanised craft which cut through the thin fibre or nylon nets," said Mr. K. Thuralratnam, Member for Point Pedro. This allegation was supported by the Leader of the Opposition, Mr. A. Amirthalingam, who had received several complaints from fishermen based at Myliddy, the largest fishing village on Sri Lanka's northern peninsula.

The Minister of Fisheries promised to intensify patrols to counter any more encroachments.

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Spillanga drying in the sun and the wind

## In Sweden, Christmas is spillanga time...

closes on August 10. When the boats return to Tjörn, the catches go to special sheds on the wharfs where the fish are cut into thin strips by hand or machine. These strips are laid out in rows on strips of wood known as spillak which hold them tightly as they dry in wind and sun. The strips stay outside for about three weeks before being taken in and stored.

They will not be touched again until the beginning of December, when the Christmas season approaches. At this time, they are dipped into tubs of water containing soda for five or six days, and finally they are transferred into vats of fresh water.

Just before Christmas, the lutfisk as they are now called are sent to all parts of Sweden and even as far as America and Canada.

The mackerel goes into the sea on the hooks of the long lines in the early evening. The crew start hauling these lines in the early morning. After being lifted on board, the ling have their throats cut immediately to keep them tender and also to give the flesh a white colour. The fish are then gutted and packed 60 to 70 in ice. A good day's fishing might yield a catch of 700 fish which will weigh around five tons.

Fishing is intensive in the early summer months and

### Steel boats

Today's boats are 26 to 34 metres long. They are constructed of steel and have engines from 500 to 1000 hp. They travel at about 12 knots and have modern equipment of the highest quality.

On their trips for ling, the boats go first to Norway to

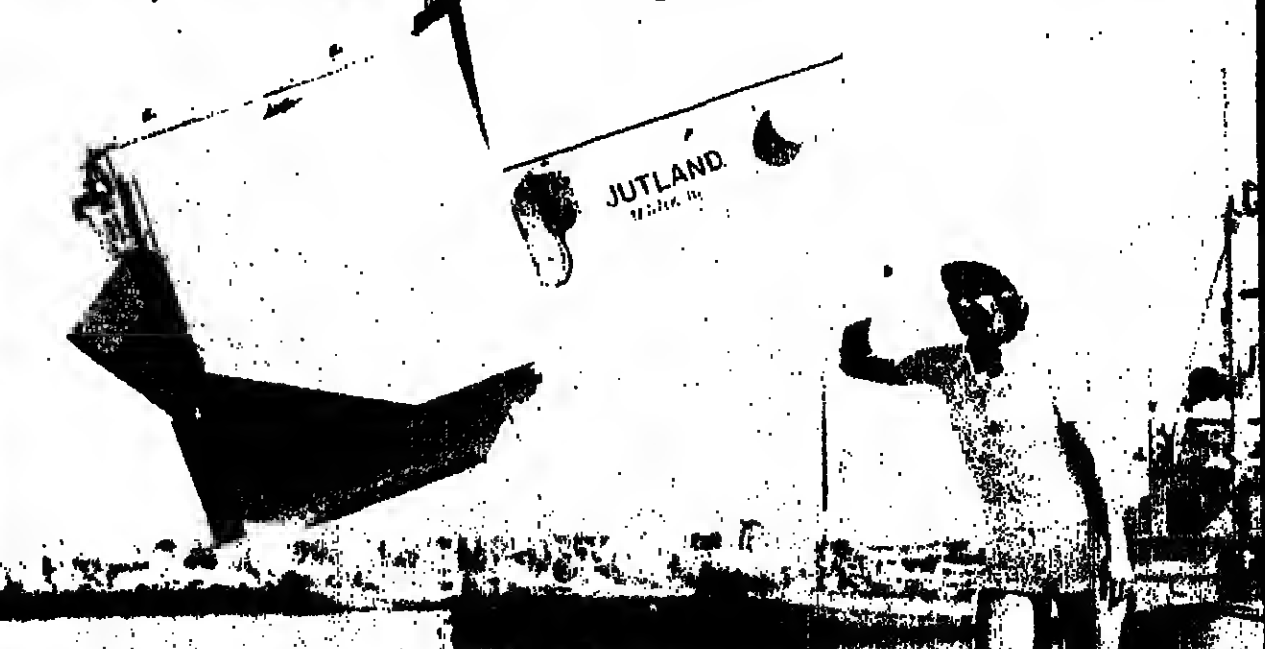
## MONEY WANTED

FOR 1978 the Norwegian Fishermen's Association has asked for financial support from the state totalling 674 million kroner (£67 million).

It is also asking the government to take financial responsibility for the large stocks of dried fish produced in 1977 for the Nigerian market. These stocks accumulated because the Nigerian authorities cut the agreed import from 18000 to 2700 tons.

Because of this, dried fish producers face financial difficulties which will inhibit their ability to accept further fish for drying in 1978 unless assistance is given.

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IN 1969, the Inter-American Development Bank carried out an analysis of the possibilities and the significance of developing the fishery industries of Latin America. From this, the Bank drew up guidelines for promotional action, outlining strategies and means for its implementation.

One immediate question is how large are the fishery industries of this vast region and what is their potential for development. In 1976 fishery production of the Latin American countries amounted to nearly seven million metric tons with an overall landed value of some 2000 million dollars. We estimate that some two million people in the region are engaged in fishing; most are in small-scale coastal fishing and yearly output per fisherman is about 3.3 tons.

Theoretically, the supply of fish in the Latin American countries is 22 kilos per person, but actual consumption is only about seven kilos. The remaining 15 kilos are exported or processed for animal or industrial use. These figures do not include fish lost because of lack of infrastructure (handling, processing and distribution facilities) or because of the use of inappropriate techniques. In large 70 per cent in the case of small-scale fish taken with shrimp catches.

In looking to development goals, it is estimated that Latin America has a deficit of two million tons of net animal protein a year, representing about 20 million tons of edible meats.

Among the possible alternatives to deal with this problem, fish would most probably be the cheapest source of protein. If 25 per cent of the protein deficit of Latin America could be satisfied with fishery products, it would mean that an additional five million tons of

fish should be produced. This would imply a 75 per cent increase over the present regional fishery production, requiring an investment of about three billion dollars. Such an investment would also mean new employment opportunities for about 500,000 people. Also, to retain only present rate of fish consumption in the region by 1990, two million tons of additional fish will need to be caught and at least 1200 billion dollars will have to be invested.

The complexity and diversity of factors involved in the

# BANK-AID BOOST FOR FISHERIES IN LATIN AMERICA

Over the past seven years, the Inter-American Development Bank has taken an increasing part in promoting the expansion of fishery industries in Latin America. In this article, JULIO LUNA — chief of the fishery section of the Bank — explains its attitude towards development aid, and its choice of priorities. The Bank has attracted world-wide support for its important work. This includes most of the countries of Western Europe, the obvious participants such as the USA and Canada, as well as Yugoslavia, Israel and Japan.



food supply problem of developing nations makes it difficult to work out long term projections. Social and economic structures and advances in technology are dynamic; no one can forecast with certainty which will be the population growth or the migration trend between the rural and urban areas in the next 15 or 20 years.

On the other hand, the development of food technology during the last decades has mainly been focused on the production of foods for the supply of the high income markets whose consumers are

normally eating more than what they actually need. There are not enough institutions well equipped and strongly dedicated to develop novel technologies for the production of non-sophisticated foodstuffs for the masses of poor people in developing countries.

## Need to plan

These limitations suggest that fishery development should be planned through successive stages, employing low capital-intensive technologies.

According to FAO estimates, the region has a potential of seven to eight million tons a year of unexploited marine resources. This figure refers only to those areas and species for which there exists reliable information that could be used in preparing tentative projections of annual catch rates. They do not include species whose economic use is still under study, such as the Antarctic krill.

In addition to the natural resources available in the oceans and inland waters, aquaculture provides a unique opportunity to increase production. It offers substantial advantages such as diversification of agricultural activities, low capital-intensive projects, high productivity, easy and quick access to markets, and self-supply of protein for isolated settlements. Problems in the implementation of a policy for aquaculture development are mainly managerial and operational. The Latin American region is short of aquaculture experts and suffers a serious scarcity of people for extension work. (But a regional training centre is to be organised in Brazil under an FAO/UNDP project). The land property structure can also be an obstacle for granting loans to small farmers, since many do not own the land where they live.

Responding to the interest shown by its member countries, the Inter-American Development Bank has helped in the identification of priority areas for fishery development; and it has financed technical co-operation programmes for the preparation of specific investment projects eligible for financing by international lending institutions.

The initial strategy guidelines

were to favour integrated projects involving port infrastructure, fishing fleet, plants and marketing systems; many also included training and research programmes. The purpose of this approach was to avoid the development of bottlenecks in sub-sectors, as the case may be, for example, if boats were to be provided without also considering the processing facilities or marketing requirements.

A second principle was to create, on the basis of these projects, new development-minded fisheries institutions, since the fishery administration in most countries has been limited to small scientific and statistical units.

The third element of the strategy was to provide preferential support to projects with the greatest socio-economic impact, despite the difficulties they involve for rapid implementation and their lower appeal to the private sector.

Finally, the fourth guideline was to design a structure for project implementation that could be used for expanding goals merely by adding new investment units to the basic scheme. For example, integrated programmes based on co-operatives or fishery corporations could be progressively expanded by incorporating new groups into the scheme.

## State projects

Depending on the status of the fishery industries of each country, projects could be initiated either through co-operatives or through private corporations; in other cases, however, they would have to be set up through state corporations until the sector became stable enough to offer the necessary guarantees that may be expected by private investors.

Intrinsic to the strategy described above is to have simple or intermediate technologies carefully selected so as to make the best use of the

available labour, and tending to yield a low-cost final product within reach of most consumers.

Up to October 1977, the Bank had financed 16 technical assistance programmes for the preparation of fishery projects. Six of these investment projects are under implementation with loans granted for their execution.

For the preparation of the feasibility studies, a co-operative programme agreed with FAO provided the necessary expertise. International consultants are also hired by the countries with IDB funds for research programmes and identification of fishery investment projects.

Fishery projects financed by the Bank are in their initial phase. They therefore do not yet provide enough information to evaluate the results by comparison with the original goals. But field observations indicate that the simple fact of organising new co-operatives aimed at ensuring orderly sales, has brought about an increase in demand and an improvement in landed prices for the fishermen. The response of fishermen in almost all the cases has been much more positive than was expected, showing enthusiasm, discipline and co-operative attitudes. This despite the fact that some of the communities were originally reluctant.

The fishery projects prepared with IDB assistance represent a total investment of US\$560 million and may require international financing amounting to US\$320 million. Projected production is 671,000 tons a year, which would represent a 10 per cent increase over the current regional catches and an increase of more than 31 per cent in the supply of fish for human consumption.

Average productivity of the 21,000 fishermen who will benefit from these projects is estimated at 32 tons per capita, which is ten times more than the present average of the region.



Working off the coast near Valparaíso: 'New employment opportunities for about 600,000 people'



LEFT: Bagging fish meal at a factory on the west coast



RIGHT: Women workers cleaning a catch in a shrimp-freezing plant

## The first six fishery projects represent a potential yearly catch of 214,000 tons

By October 1977 the Bank had granted loans totalling US\$567.8 million for the partial financing of six fishery investment projects. To this figure US\$2.8 million must be added, earmarked for technical co-operation for project preparation and implementation; and US\$12.6 million for pre-investment studies and subloans to individuals through global loans for industrial development. Total Bank financing for fisheries in Latin America thus amounts to US\$583.2 million.

Projects for which Bank loans have been granted are in the Dominican Republic, Mexico, Panama, Costa Rica, Colombia (aquaculture) and El Salvador. In addition to these countries, Honduras, Nicaragua, Guatemala, Barbados, Jamaica, Haiti, Venezuela, Brazil, Ecuador, Chile and Argentina have received financing for technical assistance.

The first six integrated fishery projects being implemented represent a potential catch of 214,000 tons a year,

which is equivalent to 700 additional grams of fish per inhabitant or a 10 per cent increase in the regional supply. The average capital/product ratio is US\$650 invested per each ton/year of additional catch.

## Jobs created

Capital employment ratio averages US\$16,300 invested for each job created. This ratio is also affected by the cost of the physical infrastructure and the different technologies involved. The Mexican Fishery Project, which is industrial using intermediate technology, has a ratio of US\$19,000 per job generated; the co-operative project of the

Dominican Republic has a ratio of US\$8,900, and the Colombian aquaculture project only US\$1,100. These figures provide a basis for appraising the capital intensity of projects.

One of the Bank's most important contributions to fisheries has been the establishment of new development institutions. All the projects financed so far have required new independent executive bodies.

At international level, the Latin American fishery industries are attracting increased attention from multinational agencies. FAO is setting up two large-scale regional programmes (one in the Caribbean and one in the

Pacific). The Latin American Economic System (SELA) has just created a Fisheries Committee. Also interested are the OAS, with a programme for marine science and assistance to co-operatives; the European Economic Community (EEC), which is showing a growing interest in fishery investment projects; and a wide range of extra-regional development agencies. Several industrialised countries, through bilateral assistance, are also participating in fishery projects in the region.

## An example

A programme of hemisphere scope such as this one, undertaken within a sector that has very little experience or tradition, is bound to have areas of weakness where mistakes could be made. This risk will be increasingly reduced as the countries develop their programme and form skilled personnel. The cases of Chile and Brazil, both of which started fishery programmes before the Bank's action, provide an

example of this sequence. In these cases, the initial impetus was provided by parallel tax incentive legislation and credit programmes. During the first few years, the weaker and newer enterprises failed because of lack of experience and of adequate assistance, but the programmes goals.

In Chile, the programme made it possible to increase catches by 1100 per cent in four years to 1.2 million tons a year, and a 300 per cent increase in domestic consumption. The Brazilian programme is achieving its goal of 700,000 tons, which represents an increase of nearly 100 per cent over the base year (1965).

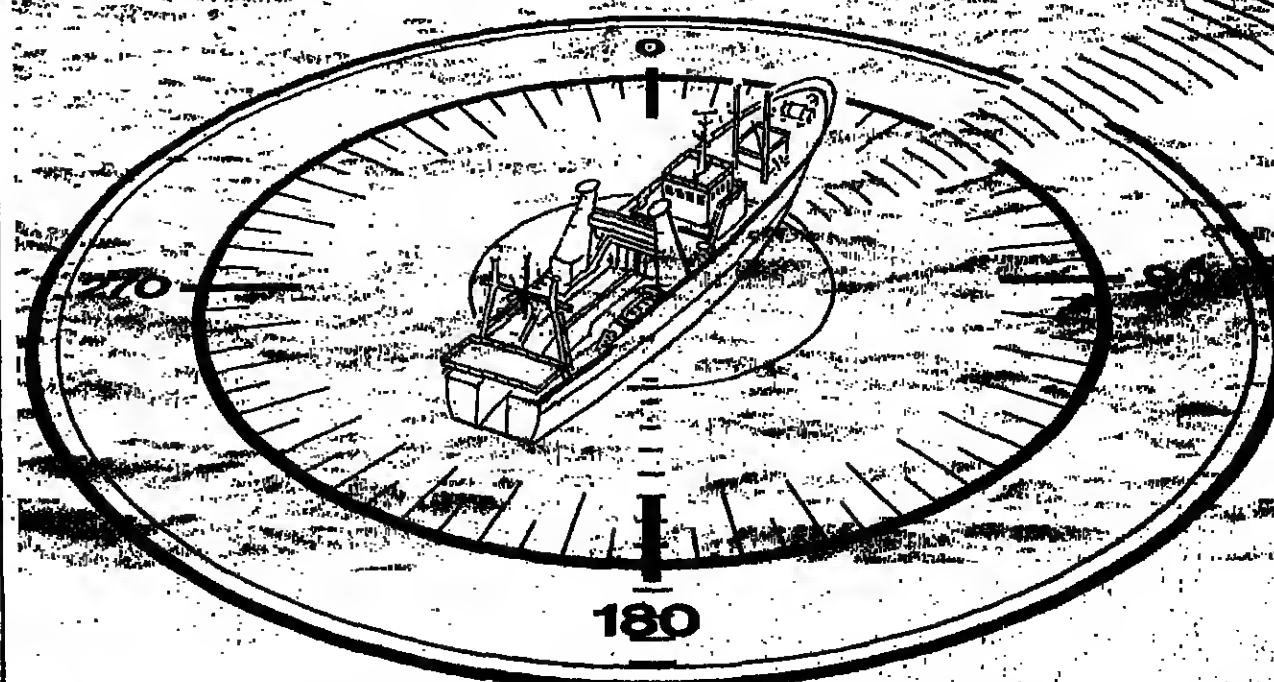
The past 30 years of fishery development show that, when there is a choice between getting the process started even at the risk of encountering unforeseen problems, or waiting until nearly perfect theoretical projects can be designed, the first alternative is the right one. Unless that first step is taken, nothing will be done in the expectation of an illusory perfect plan.

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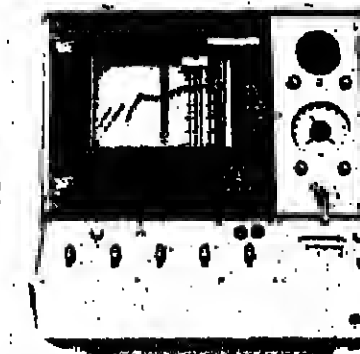


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## BERMUDA CLAIMS 200-MILE LIMIT

FOLLOWING THE lead of many of the world's larger fishing nations, the island of Bermuda has extended its fishing limits to 200-miles. Passed by Bermuda's parliament, the necessary law was approved by the governor in October.

### Self-supply fishing project

A FOUR-YEAR self sufficiency in fish programme has been launched in the Philippines by the Bureau of Fisheries and Aquatic Resources.

Faced with rising demands and a population explosion, imports have had to be greatly increased.

With a possible 100 million inhabitants by the year 2000, fish production will have to increase by at least 100,000 tonnes a year, says BFAIR director Felix Guzman.

Informing FNI of this development, Mr. I. W. Hughes, the Director of Bermuda's Department of Agriculture and Fisheries, says Bermuda recognises her obligations in taking on this greatly enlarged zone.

The first is to manage the resource properly and the second is to ensure that it is fully utilised.

"There is at present a paucity of information on the waters resources in the waters surrounding Bermuda," said Mr. Hughes, "and our first objective will be to work on resource assessment."

Applications to fish within the Bermuda EEZ should be addressed to the Minister of Works and Agriculture, The Cabinet Office, Hamilton, Bermuda.

# Agency plan for world's largest fishing zone



A skipjack pole and line boat in action off Tonga. Vessels like this will benefit from greater control of S. Pacific fisheries by coastal countries.

ESTABLISHMENT of the world's largest controlled fishing area could result from a recent meeting of 16 South Pacific countries. Held in Suva, Fiji, at the end of November, its purpose was to set up a Regional Fishery Agency.

The zone to be covered extends over millions of square miles of the South Pacific, from Pitcairn in the east to Papua New Guinea in the west. It ranges from United States Trust Territory in the north and the 200-mile zones of New Zealand and Australia in the south.

Members of the South Pacific Forum decided that the agency should be set up when they met in August in Port Moresby, Papua New Guinea. Its aim would be to harmonise fishery policies in the region, including the management of highly migratory species within the 200-mile zones of the member countries.

### Larger share

Japan, South Korea and Taiwan are the principal exploiters of these migratory species mainly tunas in this vast area. Available figures show that these fish in the South Pacific realised more than U.S.\$250 million at first-hand sale and three times that in processed form.

It is estimated that the 1977 catch totalled at over \$100 million. It is therefore not surprising that countries in the region now seek a larger share of this ocean bounty, and the capability to regulate and manage the fishery on their own.

The metropolitan countries were also well represented at the Suva meeting with a delegation of 22 from the United States, 17 from France and representatives from Britain, Australia and New Zealand, plus observers from South Korea, Japan, Canada and Chile.

Matters considered included licensing of vessels from outside the region, powers to be delegated to the

agency, and the extent of the agency's area of jurisdiction. It was clearly seen, reports our correspondent, that the very difficult question of surveillance within the proposed EEZs will require a pooling of resources.

Enforcement is a very sensitive issue. It must clearly intrude into the very principles in the draft single negotiating text of the U.S. Law of the Sea Conference, which clearly envisages small states having rights over their own living resources.

The actual physical functions of the agency have still to be clearly defined. But it must avoid duplicating the work of other fishery bodies such as the South Pacific Commission.

### Framework

Although the Suva meeting ended without fully agreeing to a final draft convention, the basic framework of the agency has been laid down.

The complexity in legal as well as in sheer physical terms of setting up an agency covering such a wide area need hardly be stressed, comments our correspondent. That the meeting ended on a strong note of confidence, reflected the degree of understanding among delegates prepared to compromise on such sensitive issues as the sovereign rights of small coastal states.

## EIGHT TRAWLERS FOR MALTA

IN THE year she worked off Malta on loan from FAO, the trawler *Jurong* carried out research which is reported to have revealed several promising areas for fishing. To exploit these, it is planned to build a trawler fleet with the help of the Kuwaiti Fund for Arab Economic Development, reports Anthony Malls.

Initially, some vessels will be obtained on loan so that fishing can begin, probably in the first six months of 1978. In the meantime, new trawlers will be constructed at the Malta Drydocks.

The first phase of the trawler project, says a Ministry of Fisheries report, is to have eight trawlers working all year round by 1980. This and other fisheries schemes were examined by a four-man delegation from the Kuwaiti Fund during a recent two-day visit to Malta. Among the places visited were Marsaxlokk fishing harbour and the Malta Drydocks.

Government interest in the industry is claimed to have stimulated development in recent years. According to the Census of Agriculture and Fisheries, published last month, the number of full-time fishermen has increased by 18 per cent, to 396, and part-timers by three per cent, to 535.

Local catches rose by 2.7 per cent, to 1500 tonnes and the value improved by eight per cent, to £M770,000.

The report claims that the government's policy to modernise farming and fishing through aid programmes is making these industries more profitable and attractive. The introduction of improved vessels is being reflected in the larger number of full-time fishermen.

## Petter power in Filipino dugout



A SMALL Filipino dugout canoe known as a Banka was put through its paces in unfamiliar surroundings recently when a Petter inboard engine powered it along Southampton water in the south of England.

FAO and other development agencies, governments and fishing industries have been working for years to motorise boats in small-scale fisheries of developing countries.

Outboard motors are the most usual. These are both portable and relatively cheap compared to the usually bulkier inboard diesels.

But the British engine maker, Petters Ltd., of Hemble, Southampton, is convinced that its lightweight diesel range makes the small, compact inboard unit a strong contender in this market.

### Many applications

"Our 'A' range engines were commercially released five years ago," say Petters, "and already hundreds of thousands of units are operating successfully over a wide range of applications."

To help train its apprentices in small fishing boat installations, Petters obtained a Banka from Buenaventura Light Boat Industry in the Philippines. An AC12 engine of six hp was installed. It took two apprentices just 34 seconds to secure it with four spring-loaded clamps. With this engine, the Banka reached speed of 10 knots; with the Petters 12hp AC2 Mini-Twin, it reached 16 knots.

The Petter AC12 consumes only 2.7 pints (1.53 litres) of fuel at full load and at 3000 rpm.

Consisting of engine, baseplate, propeller and drive shaft, the AC12 power pack in the Banka weighs less than 55 kg.

The Filipino Banka is prepared for her Petter-powered run in Southampton Water. The British engine manufacturer is convinced that its light-weight diesel is suitable for developing country fisheries.

## ROY JACKSON RETIRES FROM FAO

MR. ROY I. JACKSON retired from FAO last month after more than 14 years with the Organization. During the last six of them, he was Deputy Director-General.

But in developing and developed countries world-wide it is as "Mr. Fishing" of FAO that he is best-known. For it was from the fishing industry that he came and it is to fishing that he plans to return on his retirement.

Born in Alaska in 1916, Roy Jackson attended school in Juneau before entering the University of Washington in 1934. He became one of the distinguished group of American fishery scientists and administrators to begin their careers with the University's B.Sc. degree in fisheries.

Later he took a degree in civil engineering at the University of British Columbia. This typifies the North American period of his career where his professional commitments and interests ranged from Alaska, through British Columbia and into the U.S. Pacific north-west.

Until 1955, Roy Jackson served with the International Pacific Salmon Fisheries Commission (IPSC), rising to assistant director. From July 1955 until April 1964, he was executive director of the International North Pacific Fisheries Commission.

### Experience

His considerable experience in international fisheries in these posts led to his appointment in 1964 as director of the then Fisheries Division of FAO in Rome. The following year he negotiated the Division's elevation in status and size to a full Department of FAO.

He helped to set up the



Roy Jackson — no intention of giving up fishing.

inter-governmental Committee on Fisheries (COFI), which serves as an advisory body to the Department, and he had a leading part in the growth of the world-wide field services by FAO in developing-country fisheries.

In January 1972, he left the Department of Fisheries to become DDG, the most senior appointed officer in FAO.

"After six years in this difficult but interesting position," Mr. Jackson told FNI, "I now intend to return to my lifelong professional activities in fisheries."

"My whole life has been spent in international work and I have no intention whatsoever of giving up at this point."

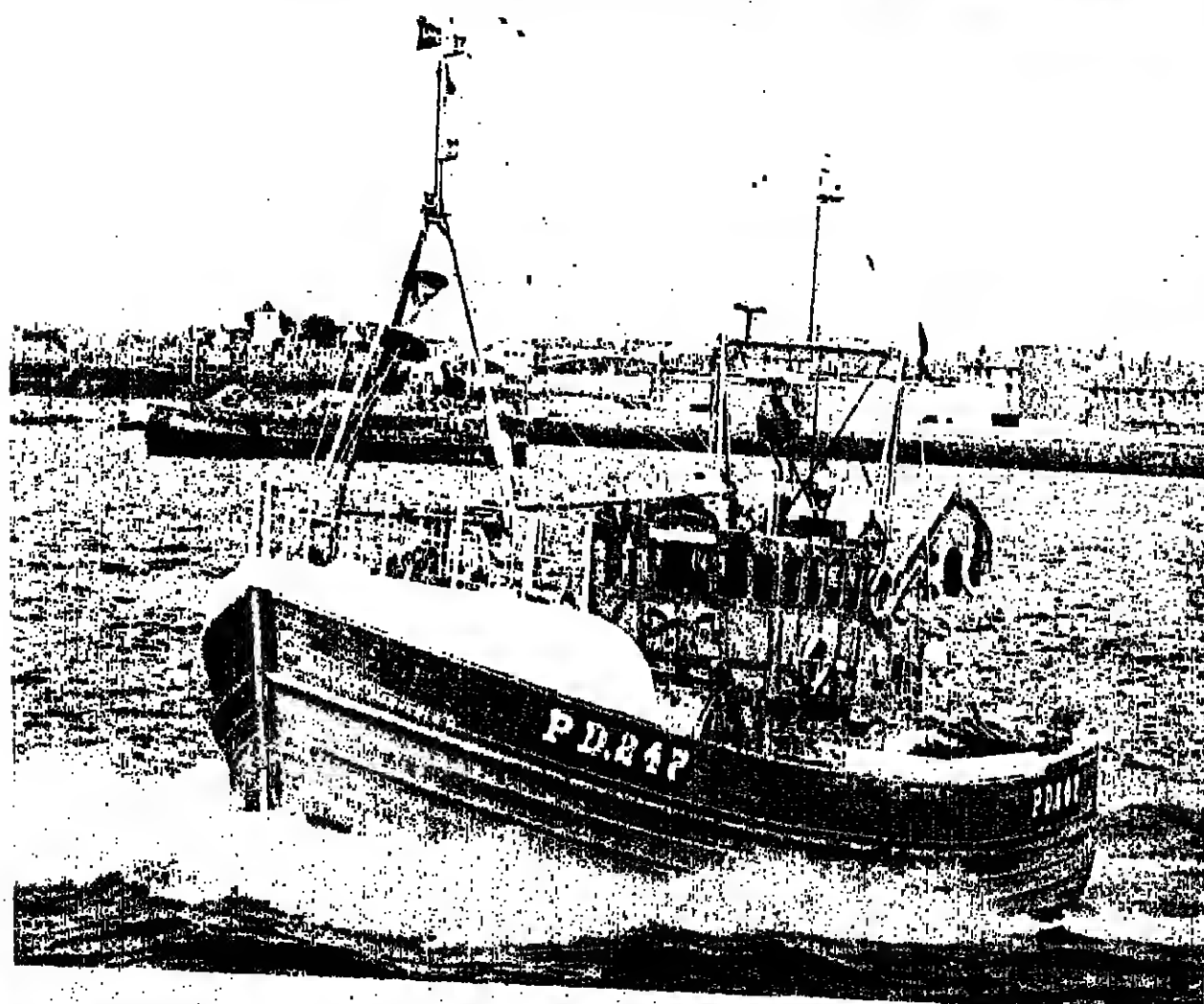
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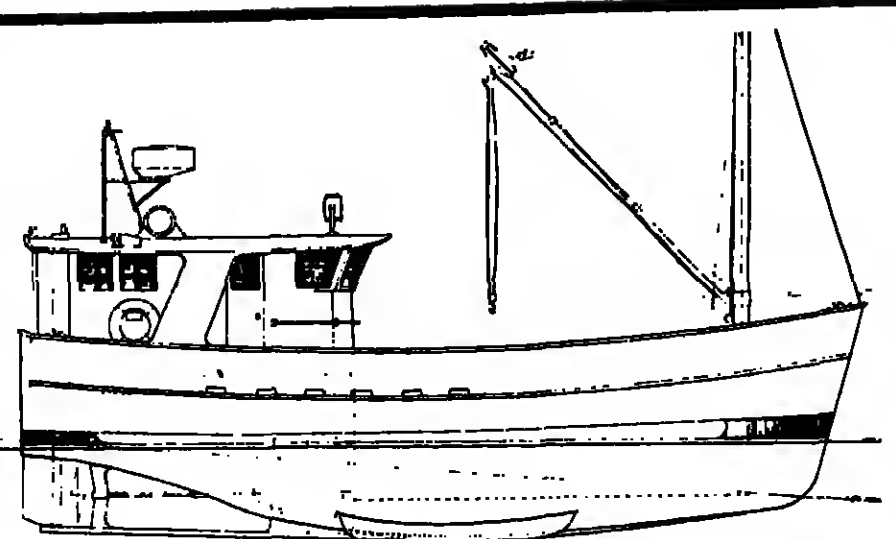
## British aid in over 20 countries

FROM artisanal fisheries in the Sudan to a cold store in St. Helena, Britain's Ministry of Overseas Development is supporting fishery projects in more than 20 countries.

The estimated cost of the 40 projects listed is nearly £4.4 million.

### Main projects

Among the larger projects are coastal fisheries work in Tanzania (£265 000), artisanal fisheries and a pilot project in the Sudan (£790 000), four projects in the Seychelles (£619 000), five projects in the Solomon Islands, including evaluation of turtle resources (£290 000), a skipjack tuna survey for the South Pacific Commission, two projects in Malawi (£395 000), inland fisheries in Bangladesh (£435 000), and coastal lagoon fisheries and marine food processing in Mexico (£240 000).



## Ocean voyage will test cement boats

WORK has started on a small fish carrier for the Republic of Guinea-Bissau in West Africa. The ferro-cement vessel is the first of two ordered by the Swedish International Development Authority.

by  
DAG PIKE

The design is by the British firm McAlister, Elliot and Partners who will also supervise construction and arrange delivery and crew training in Guinea-Bissau.

Confidence in the seaworthiness of these vessels is indicated by plans to deliver them by sea, a trip of 2500 miles over open ocean.

Overall length is 12.8 metres, beam, 4.4 metres, loaded draft 1.36 m. and light ship displacement of 17.3 tons. The 30 m. fish hold is insulated with polyurethane foam.

The hull will be constructed to the highest ferro-cement standards with special reinforcing to take the strain of beaching or drying out.

Ferro-cement bulkheads separate the hold from engine compartment aft and forepeak forward. Extensive internal framing and stringers further strengthen the hull.

The soft wood deck planking is laid on timber beams. Hatch coaming and hatch are fully insulated. The aft wheelhouse and accommodation are of marine ply. A steel mast-derrick forward combines with a manual

winch for handling heavy cargo.

Propulsion is by a Volvo Penta MD70B diesel linked to a Self-Change Gears MRF 350 HD 3:1 gearbox and 720 mm dia. three-blade bronze propeller. Speed is about eight knots. Fuel and freshwater capacities are 600 litres and 400 litres.

## Fish stock riches in Arabian Sea

THE FISH resource the North Arabian Sea may amount to about two million tons of pelagic species and an enormous 100 million tons of mesopelagic species.

The results of a preliminary survey were reported to a recent meeting in Kerala, India, of FAO's Indian Ocean Commission. The survey was carried out by two modern fishery research ships FAO's Norwegian-supplied Dr. Fridtjof Nansen and Japan's Shoyo Maru.

Extending in area from Somalia through the Gulf of Oman to the Pakistan-Indian border, the survey consisted mostly of investigation cruises by the two ships. It extended from January 1975 through to December 1976.

According to the report, the acoustic method was found to be particularly suitable for this tropical and sub-tropical region. It suggests that other areas should be surveyed using the same technique.

The biomass indicated was estimated at 1.4 to 2.2 m. tons of small pelagic fish.

Impressed by the potential for fishery development revealed by the report, the Commission's executive committee spent some time discussing how best to use catches. Initially they would

probably go for reduction in meal and oil "in order to exchange and generate a profit." But it was recognised that the eventual aim should be the fullest use of the resource for direct human consumption.

Looking to the future, Mr. Harry Winsor, leader of the Indian Ocean Programme, told the committee that more and more requests were expected for the services of the programme's staff. The programme, he added, intended to assess the effects of the 200-mile economic zones in the area.

## 30 Trawlers for India

CENTRAL Inland Water Transport Corporation Ltd (CIWTC), an Indian government concern, has concluded agreement with a group of yards in Norway for the construction of small deep-sea trawlers.

It is reported that about 60 boats may be built under the agreement, about 30 at CIWTC's boatyard at Rajahmundry in Calcutta, and the same number by yards in Norway.

The project will receive financial assistance from the Norwegian government, and details are being worked out.

## Mozambique seeks catch boost

THE SOUTH-EAST African state of Mozambique has one of the smallest marine catches in the world. It is just 13 500 tons a year along a coast of 2500 km.

But the government is planning to correct the anomaly. Over the next three years the fishing industry is to be developed to supply home and export markets.

The target for local consumption is 24 000 to 25 000 tons by 1980. From about 8 000 tons a year at present, exports of prawns and spiny lobsters are planned to reach 15 000 tons over the same period.

Mozambique's waters inside her exclusive economic zone, are being surveyed with the help of a research team provided by the Norwegian Agency for Development.

A Norwegian research ship arrived in August to start a year-long investigation to find new fishing grounds. Fishing methods will also be tried out.

When Mozambique became independent in 1975, the Frelimo government passed legislation prohibiting foreign fleets within the 200-mile EEZ. In September last year, it established a national fishing company, EMOPESCA.

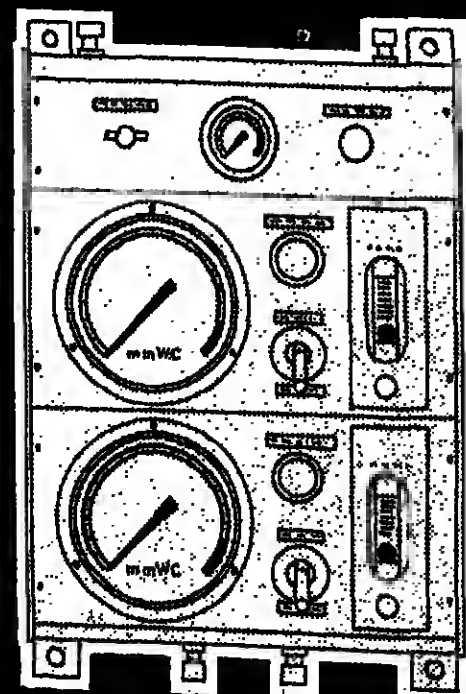
This state concern took over some ten companies formerly privately owned. With them as its subsidiaries, it has a fleet of some 30 modern small trawlers. It will expand this fleet over the next three years and will also train some 200 skippers and engineers.

Beira has been chosen as the country's central fishing port. It will service boats in the EMOPESCA fleet.

Refrigeration plants with a total capacity of 3000 tons will be set up in the ports of Maputo, Beira and Quelimane.

A joint USSR-Mozambique company is to be formed soon to concentrate on catching and marketing fish for the local market.

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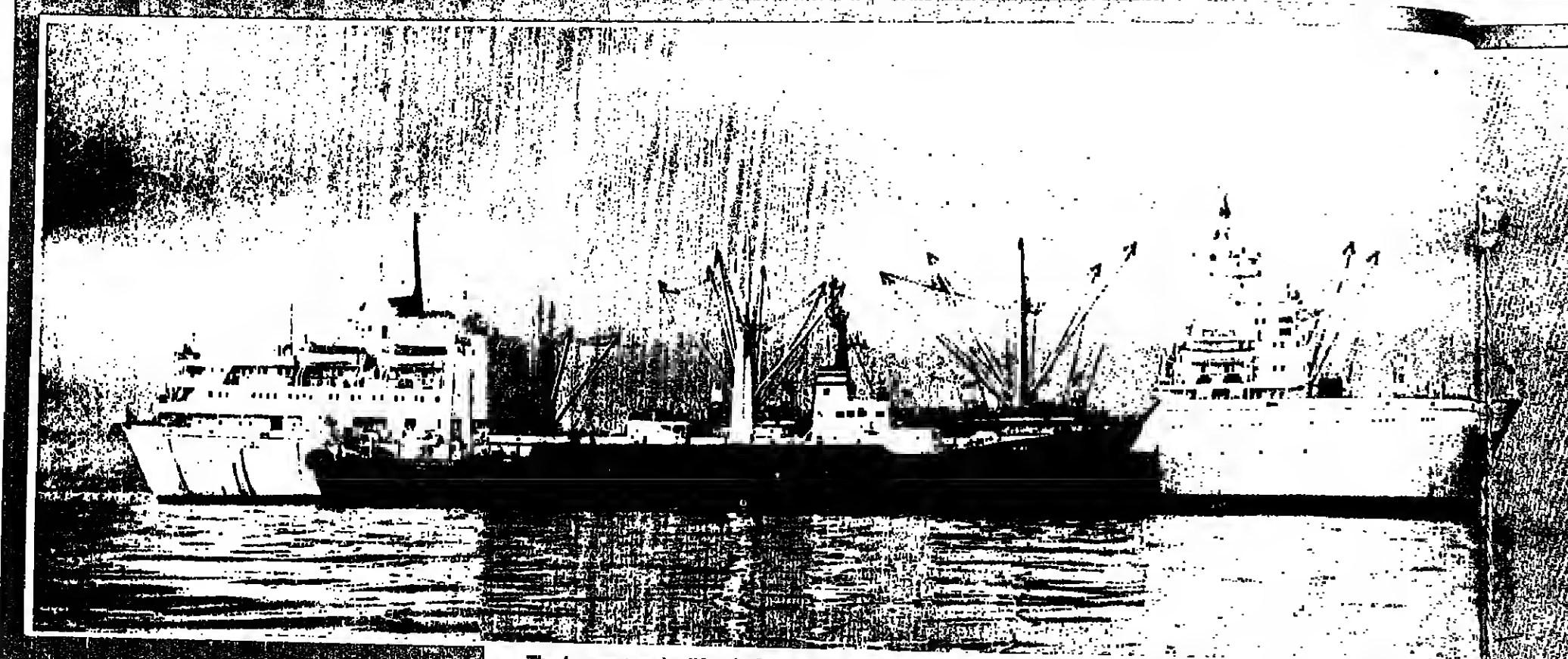
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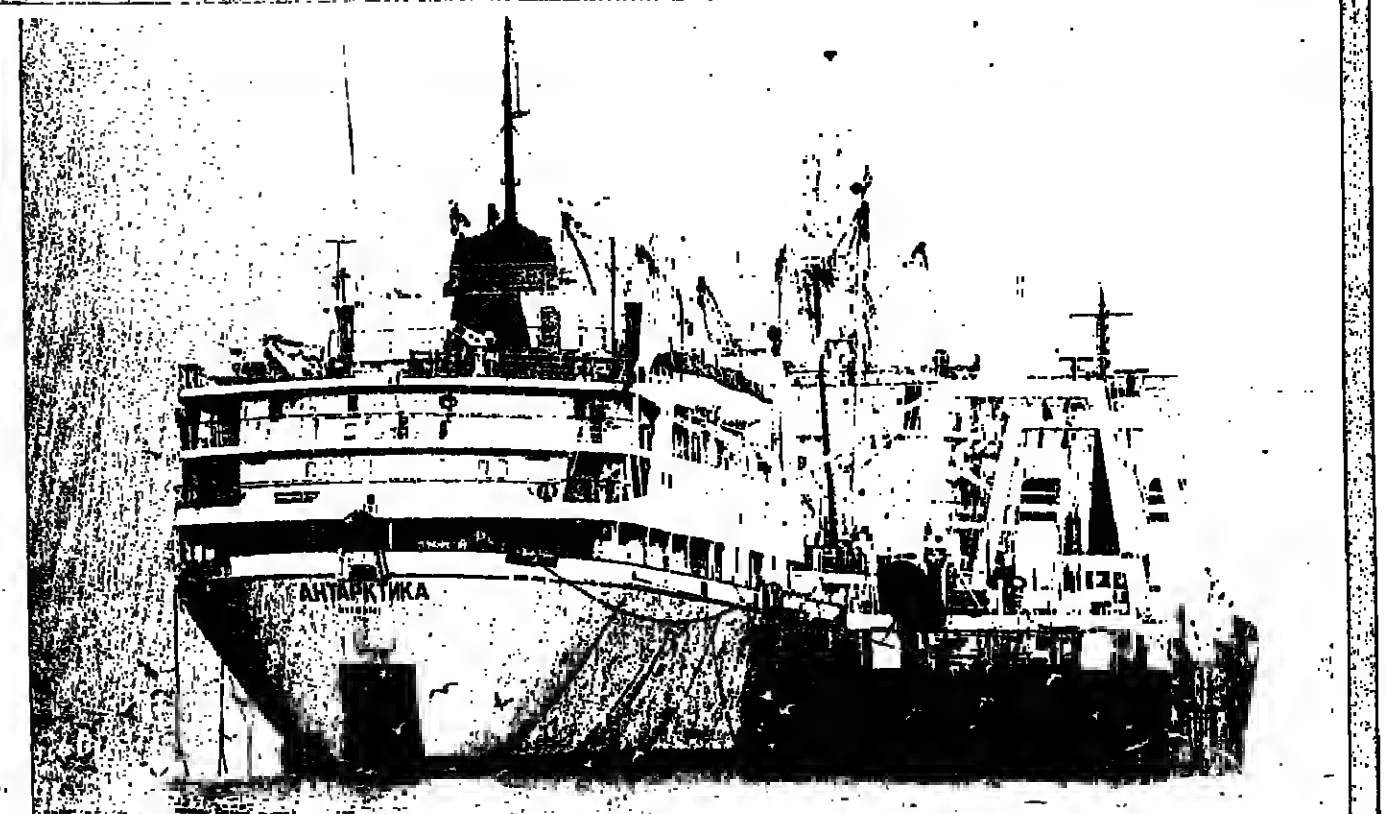
The freezer trawler "Arctic Galliard" transships her fish to the factory ship "Antarktika"

## In a class of their own

Ships of 13 750 gross tons (10 120 tons d.w.), the B-69s are 164 metres long overall with a beam of 21.3 m. They have a fish cargo capacity of nearly 10 000 sq. m.

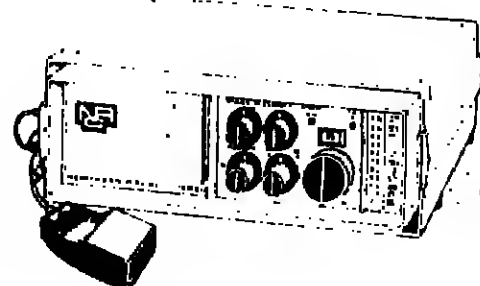
Built in the Lenin shipyard in Gdansk, Poland, in 1967 and 1975, the *Antarktika* and *Rybak Latvii* almost span the eight or nine year period when the B-69 class factory ships were built for the Soviet fleet. Some 35 ships were delivered in the series. This class has now been succeeded by the larger and much more expensive B-670 class.

The main engine is a Burmeister & Wain-Cegielski diesel developing 7200 bhp to give the ship a speed of 15 knots.



A large British trawler is dwarfed by the factory-ship buyer of her mackerel

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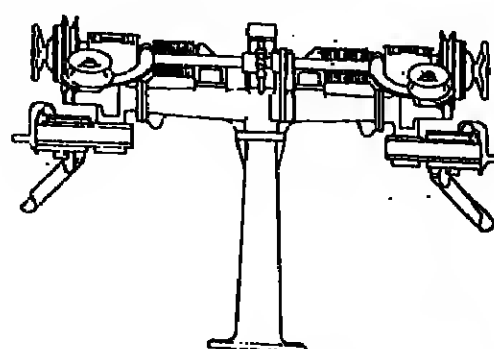


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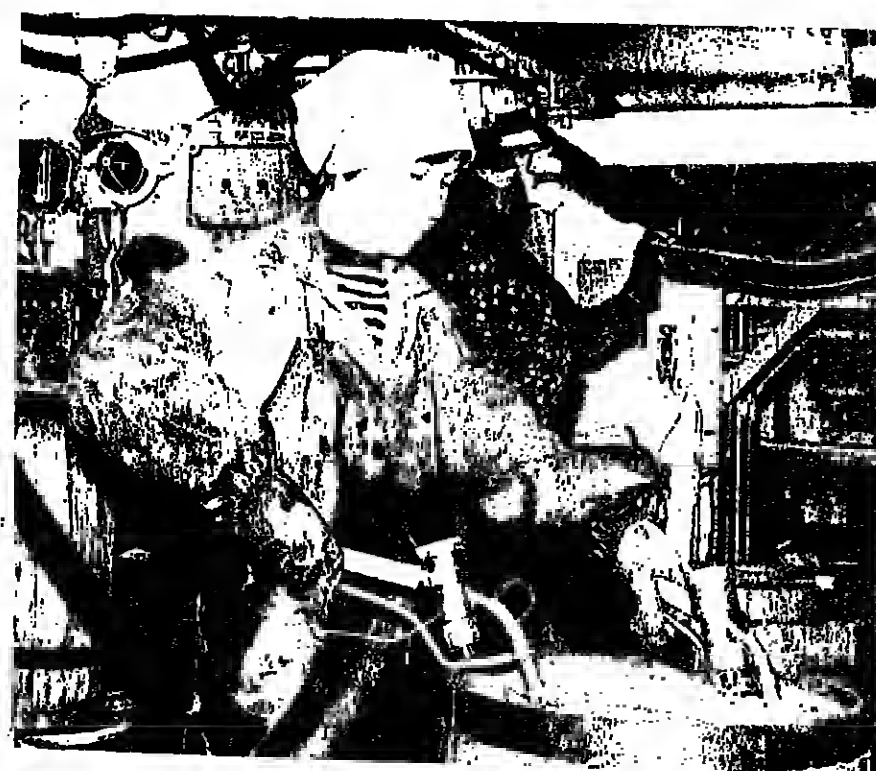
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A factory worker brines the barrelled mackerel aboard the "Rybak Latvii"



SETTE MARI

Aboard the purse seiner "Sette Mari", fish is taken from the hold to the factory ship baskets

The larger mackerel are fed into Baader 181 machines for filleting

A FLEET of 20 British trawlers and purse seiners is feeding two Russian factory ships with mackerel off the English south-west coast.

These include Britain's largest purse seiner the 45 metre (148 ft.) Swedish built *Sette Mari* and the 85.4 m (280 ft) *Arctic Galliard*.

The two Russian B-69 type Polish-built factory ships *Rybak Latvii* and *Antarktika* are each capable of processing around 250-tonnes a day, but British regulations allow a catch of only 3-and-a-half tonnes a day per crewman.

The *Rybak Latvii* is working with a crew of 229, including 25 women. During transshipping, which in heavy weather is proving hazardous, cylindrical rubber fenders and tyres are used to keep the vessels apart. The purse seine fish, held in chilled seawater tanks, is favoured by the Russians for its quality.

## Hygiene and tidiness

Brailed out of the purse seiner's hold, the catch is transferred on deck to a steel-hox type cage for lifting aboard the factory ship.

Around 800-tonnes of fish a week is going aboard the Russian vessels. Despite the high throughput of fish, excellent standards of hygiene and tidiness are maintained.

Once the mackerel reaches the factory deck, it is handled three ways:

using Baader 181 machines, frozen, and as a brined and product. In addition, there is a plant aboard which can process 20-tonnes a day for animal feed and oil plant with a capacity for one-tonne an hour.

The bulk of the fish goes for whole fish in Polish-manufactured tins. These freeze the fish down in a one-hour cycle. Blocks of ten fish are frozen and eventually packed into a carton. The two air-tight cartons freeze up to 90 tonnes a day.

Five to six per cent of the fish is packed into fillets, while the frozen fish goes back to the Soviet Union for canning or smoking.



Only the large mackerel are used for fillets, with the mediums going for salting and smalls being frozen whole. The salting fish is packed in 25 kilo wooden barrels.

The Russian mackerel operation off Falmouth, Cornwall, is divided between the two factory mother ships *Rybak Latvii* and *Antarktika*. Most of the British-caught trawl fish is taken aboard *Antarktika*, while *Rybak Latvii* is mainly handling fish from Scottish purse seiners.

## Man at the centre

The *Rybak Latvii* is no stranger to British shores. During the summer she worked successfully off the Scottish west coast transshipping mackerel in an operation mounted through Joint Trawlers Ltd., which is also organising the Russian set-up off Falmouth.

At the centre of Joint Trawlers' south-west operation is Russian-speaking Tomasz Ciechowski, who works in conjunction with Boyd Line of Hull and Clipper Seafoods of Aberdeen as suppliers. The Boston Group of Hull and Richard Irvin of Aberdeen are also linking-in their trawlers under an arrangement with Boyd.

Captain Kostlyze Nikolay, in an interview, pointed out that while the bulk of processed fish goes back to the Soviet Union, some of it is re-exported to Africa and even, ironically, back to the UK.

# Holy mackerel!

## British trawlers are catching for the Russians



A key figure in the operation is Tomasz Ciechowski of Joint Trawlers Ltd

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# NOW SKIPPERS CAN MONITOR TRAWL LOADS

## New aid from Simrad

A NEW instrument developed by the Simrad company of Norway should further reduce the risk of mid-winter trawl cod-ends bursting under heavy catches during fishing for blue whiting in the north-east Atlantic.

Known as the Simrad Catch Indicator, it shows four stages in the filling of the cod-end, and these are presented as easily-readable marks on an echo recorder.

The indicator and the reasons for its development were described recently

at the marine laboratories in Aberdeen, Scotland, and Lowestoft, England, by two Simrad engineers, Mr. Arnly Borud and Mr. Raymond Brede.

Mr. Borud, who is technical manager in charge of R. & D. work in Simrad's fishery division, showed a short film to illustrate the techniques of blue whiting fishing.

This species, perhaps more widely known as poutasson, is a small member of the cod family, and it is known to occur in large quantities in deep water to the west of the British

Isles in April and May. Estimates of the resource indicate that it might be able to yield as much as one million tons a year.

Vessels of a number of European countries have been testing this resource but, so far, only the Norwegians have taken it to a commercial scale.

They use part of their fleet of big purse seiners specially adapted, by the addition of a trawl winch and a net drum, to tow high-capacity mid-winter trawls. Initially, fishing was spoilt by the bursting of nets under the strain of

catches. Since then the nets have been specially strengthened, but bursting is still a problem.

Why this should be was evident from the film. As the ship, the *Gerda Marie*, hauled up her net, the bag surfaced just astern like a massive overfilled sausage, crammed with fish. In this state, it is too heavy for the ship to lift and so the fish are transferred to the hold by a submersible pump.

Catches such as this enabled Norwegian purse seiners to increase their haul of blue whiting from 200,000 tons in 1976 to nearly 400,000 tons last

year. Most of this fish is supplied to the meat plants and the haul is expected to go up again in 1978, when at least 30 vessels will be equipped with the Simrad indicator.

This consists basically of four strongly-made sensors which are fastened to the webbing along the length of the cod-end. Each is a folding steel frame of four bars, attached at four points to the fastening chain, and held in a collapsed position by magnets (see drawing). As the cod-end fills with fish, the magnets are pulled apart and this actuates a relay.

The indicator works in conjunction with a Simrad Fish Trawl Eye, or similar headline transducer, and the information passes through this and along the transducer cable to the ship. There, marks on the recorder chart show whether the bag is quarter, half, three-quarters full, or full.

While these are not precise, continuing indications of the amount of catch, they are thought to be enough to give the skipper who knows his gear and the fish being taken enough information for him to act to prevent damage to the net.

Mr. Borud also gave news of the success of another Simrad product, the CD Situation Display for use in conjunction with the Simrad SL, SL or SQ sonars when purse seining. This display gives the ship a continuous picture of everything that is happening as it nets its fish — the ship and its track, course and speed, the fish shoal and its direction of movement, depth and size.

This computer-linked aid is expensive, costing around £5,000 plus the cost of the sonar. But the price does not seem to have deterred purse seining owners. So far 25 sets have been installed, most of them in Norwegian ships, and another 15 or so were on order last month.

## Frozen and wet fish container

WET AND frozen fish can be packed in a new moulded container from the British firm, Speedwell Packaging Co. Ltd.

Made of lightweight, expanded polystyrene, the 28lb. capacity boxes are rigidly constructed with removable lid and a drainage slot.

With a high strength-to-weight ratio, the polystyrene is an economical packaging material and provides good thermal insulation. It absorbs very little water and stands up well to wear.

The containers are priced at 50p each in a minimum order of 100. If 1000 or more are bought, cost reduces to 45p.

## SL sonar 'good as big brothers'

DECCA RADAR, the Simrad company's agent in the United Kingdom, reports that the smaller SL sonar "is now almost as good as its big Simrad brothers in picking up mackerel, especially at night."

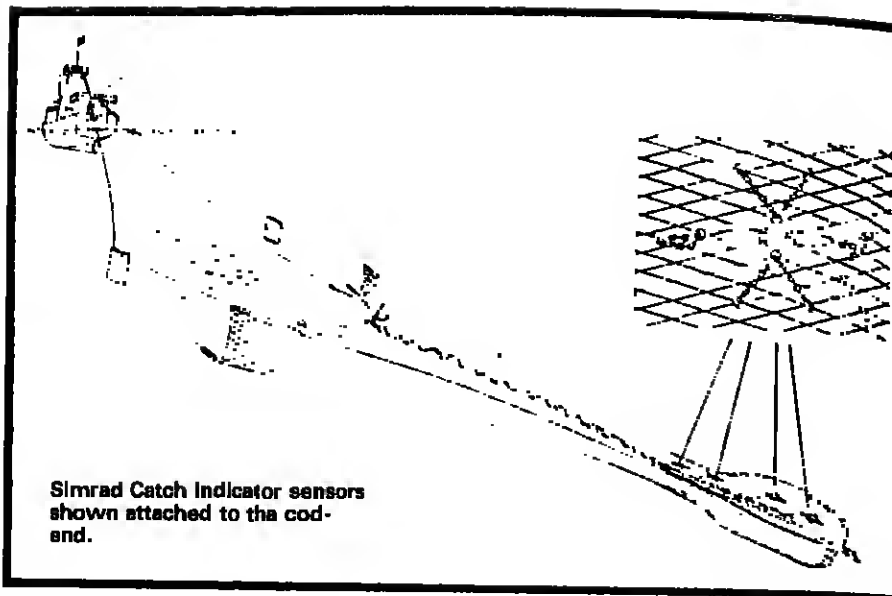
This is due to a new and simple modification which Decca says its engineers can effect in a very short time.

The vessels carrying out the modification are engaged in the fishing for mackerel off the south-west coast of England. The first five of them were all reported to be getting early benefits.

"The new modification has certainly done the trick," said Mr. Alan Nicholson, of the Brixham mid-water trawler *Peacocks II*. "I am getting mackerel at 1300 metres a day and 500 metres by night, as well as very good results with pilchard and small shoals of sprats."

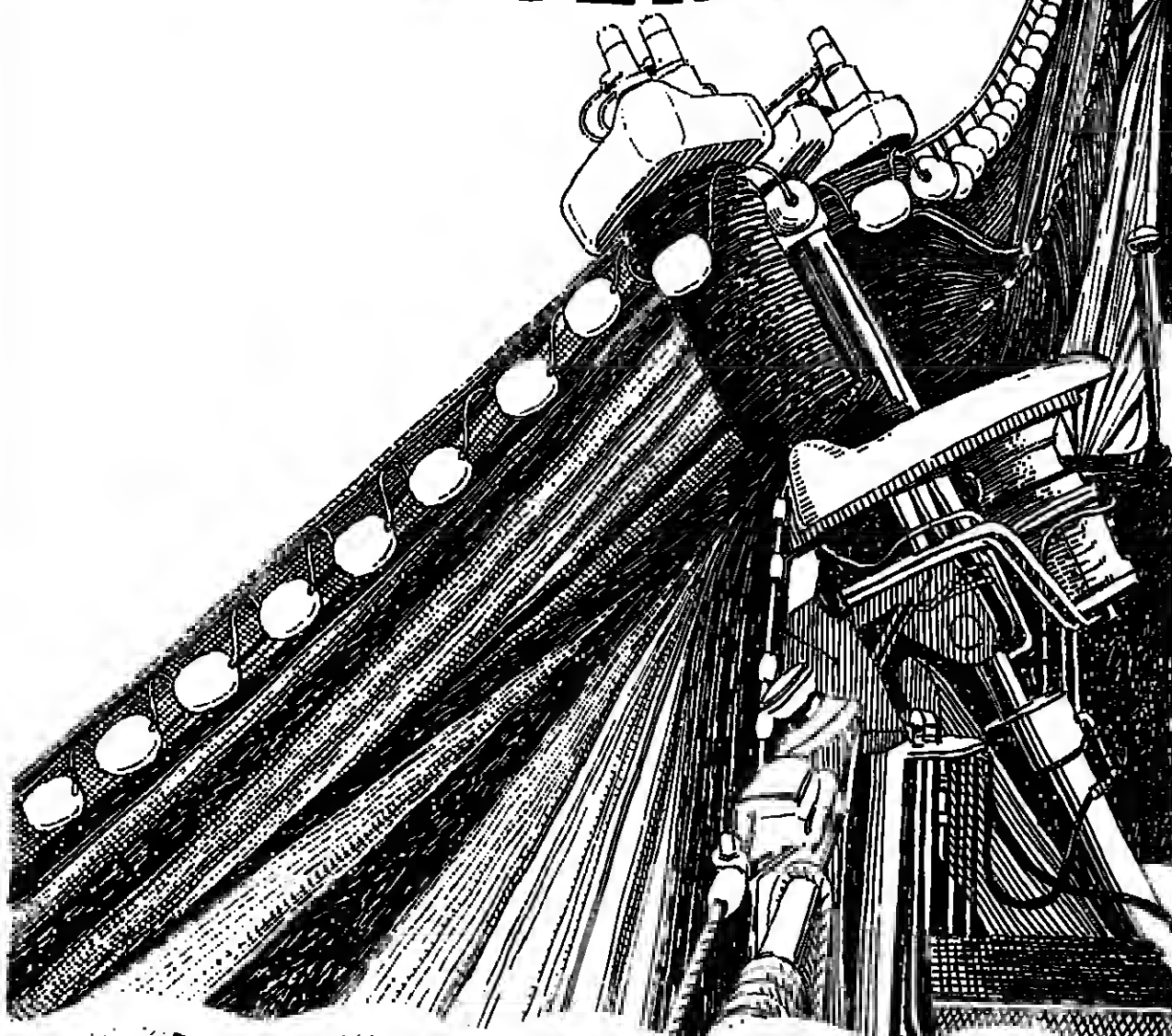
Skipper John Lota, of the trawler *Burton Lonsdale*, said he and skipper Terry Fairley, of the *Bishop Burton*, had found a great improvement, especially when ranging on sprats, with clear recording of targets. Both these boats are owned by the Newington company, which is modifying the rest of the Simrad SL sonars in its fleet.

The modification consists of changing a printed circuit board (and adding a switch) to provide receiver gain control as an alternative to automatic gain control (as in the larger Simrad sonars). The frequency is not changed and the excellent results, says Decca, "would appear to be the last word to the high frequency/low frequency for mackerel controversy, in which we have always maintained that frequency is not the major consideration."



Simrad Catch Indicator sensors shown attached to the cod-end.

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# Italian yards benefit from tuna boom

SHIPYARDS in the Italian town of Viareggio are benefiting from the continuing demand for tuna vessels from the south of Italy, reports an FNI correspondent.

The developing tuna area is in the bight between Sicily and the western coast of Italy and the Italian government has been assisting the development of the industry with grants and loans.

Altogether some 30 boats have been built for this new fishery over the past four years and almost all of them have come from yards in Viareggio. Between

## VIAREGGIO LEADS WITH 30

## BOATS IN FOUR YEARS

32 and 36 metres was the popular size for a while but as the fishery has developed and has the appearance of becoming firmly established, owners are looking for larger boats and currently under construction are vessels 42 metres long.

Four yards in Viareggio are building tuna vessels for this area, with six boats under construction. To meet the demand, two of the yards have been completely modernised with facilities bordering on the new dock basin under construction in the port complex. Codicasa has two tuna vessels building its new yard and Giorgetti has one.

## Generous

Because Sicily is a development area with little local industry, the Italian government offers generous terms for developing the tuna fishery. Grants of up to 40 per cent are available for new vessels under construction and long-term loans at low interest rates help cover much of the balance. Most of the vessels are commissioned by co-operatives.

The fish are caught close inshore and so the tuna boats are not equipped to process at sea. Most of the catch is landed after only a day or two at sea, in Palermo where the main processing facilities are situated. The boats get a fixed price for all that is landed, assuring a steady market.

Because the tuna shoals are inshore, catching is restricted to Italian boats but this has not prevented the Japanese from trying to get a foothold. Very often a Japanese factory ship is based off the harbour at Palermo offering the fishermen a good price for their catches. Some are tempted by the offer, but most of them are content with the price ashore recognizing that it also offers security. A steady demand is created by the very high quality of the landed fish.

The season lasts from April to September. A further run of tuna is generally found to the north off the coast of Genoa in September and many of the fleet set off north to participate in this before the vessels are laid up for the winter. A few of the vessels work during the winter on long-lining but most owners find it cheaper to lay-up.

Visual sightings are used to locate the shoals but now sophisticated sonar equipment is being fitted. Aircraft detection has been tried but so

far has not proved very successful, largely, it is thought, because the pilots have not been skilled in this.

The appearance of the tuna shoals has brought a welcome boost to yards otherwise short of orders. The largest ship-building yard in Viareggio, Soc. Esercizio Cantieri is also building tuna vessels, but these are large purse seiners on the California pattern to work from Pointe Noir in the Congo Republic. The three ships are for an Italian-Congo consortium and the first two have already been delivered (see FNI August 1977).

## Seal catch quota increased

THE Canadian-Norwegian Sealing Commission, meeting in Ottawa, agreed on a total allowable catch (TAC) for 1978 of 180,000 harp seals, six per cent above that allowed in 1977.

This includes 10,000 for Greenland, the Canadian Arctic and Labrador. The total for the Gulf of St. Lawrence and the icefields north-east of Newfoundland and Labrador will be 170,000, up from 160,000 in 1977.

Norway's share remains the same at 35,000 seals, while Canada's share rises from 125,000 to 135,000. Official dates for the hunt are March 10 to April 24.

Announcing the quotas, Canadian Fisheries Minister Romeo LeBlanc said scientists had advised that the present population of harp seals could sustain a catch of 227,000 to 243,000.

Canadian policy, he added, was to allow the seal population to continue its increase by permitting no more than 75 per cent of the sustainable yield to be taken in 1978.

## NORWAY AID TO VIETNAM WILL BE £32m

NORWEGIAN development aid to Vietnam in the period 1977-1981 will amount to 320 million kroner (£32 million) of which 250 m. NOK will go to developing the fisheries. In the period 1973-76 Norway gave fisheries aid to North Vietnam totalling 50m. NOK.

The new regime in Vietnam has requested a number of changes in projects previously agreed. The fisheries centre intended for Cua Hol — budgeted to cost 110 m. NOK — will now be located at Ha Long near Halphong, and the 2.8 m. NOK fish meal plant to produce meal for human consumption designated for Halphong will now be established further south.

## Two boats by spring

Norway will also sponsor a boat building programme. The first two vessels are being built as prototypes in Norway and will be sailed to Vietnam in the spring 1978. Further vessels will be built at a yard in Halphong.

The 25.8m. NOK research ship *Blen Dong*, built by Mjølsem and Karlsen in Bergen and delivered in November 1976, is operating on a budget of 12m. NOK up to and including 1979. Norway has undertaken to underwrite this cost and maintain key personnel on board.

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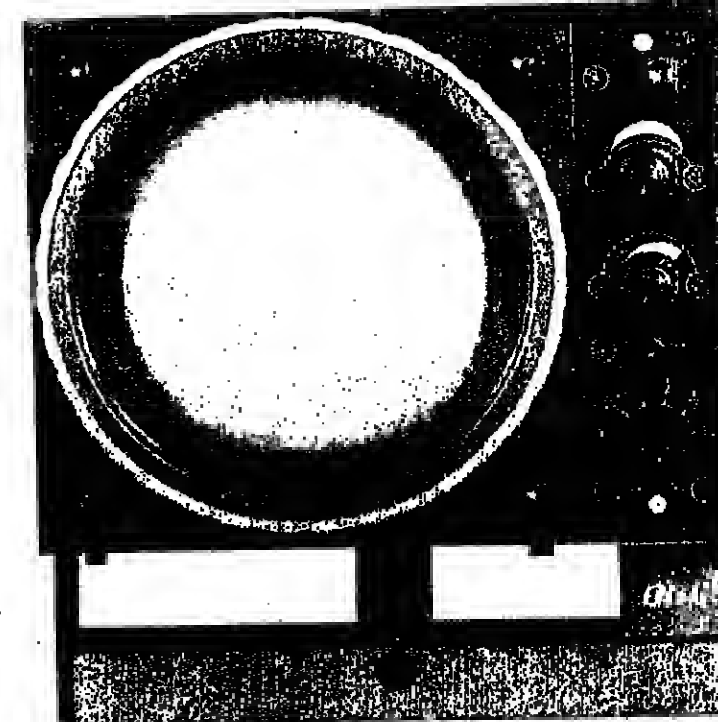
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## BOATS &amp; BUILDERS

## French yard pulls in £3.5m. superseiner order

AN ORDER worth 30 million francs (nearly £3.5 million) for a big tuna purse seiner has come as a welcome end-of-year boost for the French yard Ateliers et Chantiers de la Manche of Dieppe.

The ship will be a development of the successful Concarneau-based purse seiner *Clema* but will be eight metres longer, at 68 metres overall (223ft.).

The owners of *Clema*, COBRECAF of Concarneau, will have a 70 per cent share in the new ship which will operate within its fleet. The other 30 per cent is being shared equally by two canning firms, Ets. Paul Poulet and Ets. Paul Chacun.

Operational economy is emphasised in the latest description of the Super-*Clema*. Although larger and with 200 m3 more carrying space, the engine power is

about the same. But a similar performance will be obtained by using a higher speed engine, a Deutz RBV 6.M.540 developing 3600 hp at 650 rpm.

Auxiliary power plant will consist of three 400 kVA alternators driven by Deutz engines. The ship's 300 hp bow thruster propeller will be electrically powered.

The catch will be carried in 16 identical wells equipped with a flotation unloading system. This is capable of discharging 250 to 300 tons of fish a day. Refrigeration will be by Matal with Sabroe compressors. Freezing capacity will be 94 tons in 36 hours.

Hydraulically powered, the ship's five-drum 260 hp purse seine winch is being made by Brissoneau Lotz Martre. The power block is a Marco Puritic model 48B. On her overall length of 68

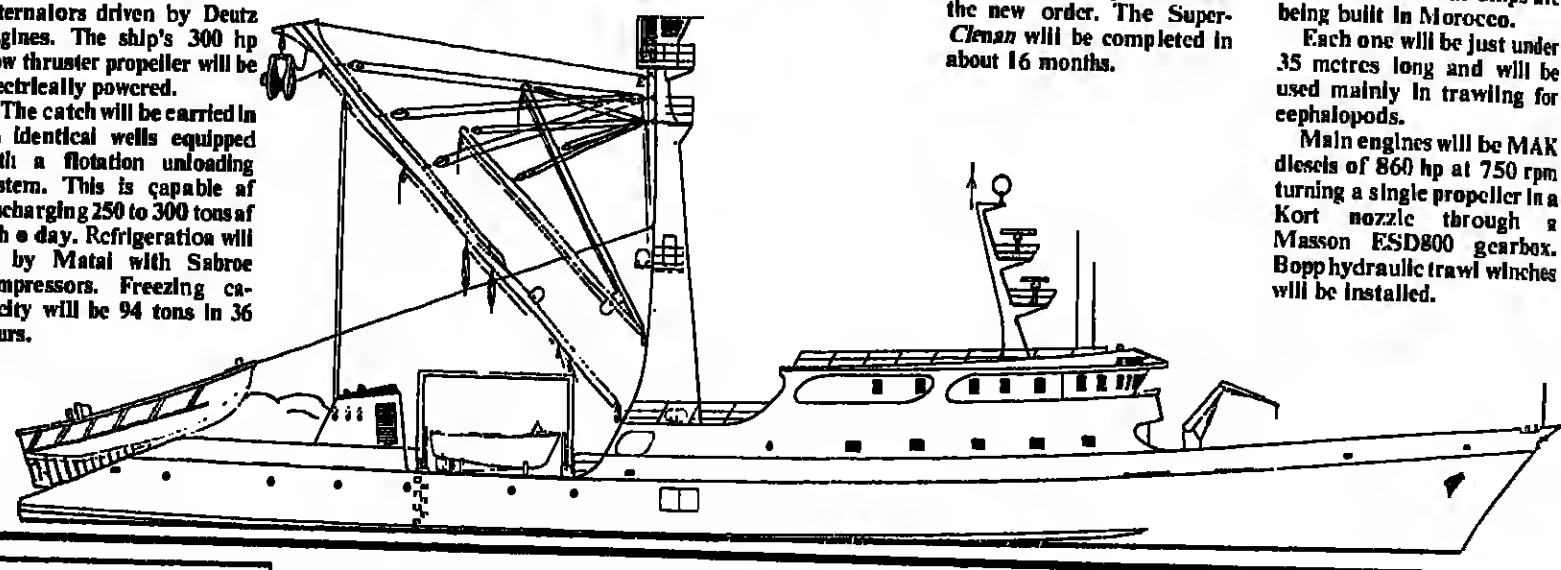
m, the ship will have a beam of 12.6 m, and depth to upper deck of 8.75 m. Fish well capacity will total 1250m3. High standard accommodation is to be provided for up to 18 crew.

By taking over the SIC-CNA yard at St. Malo, A.C.M. has added considerably to its building capacity, ability to offer quick delivery was one of the factors which helped it secure the new order. The Super-*Clema* will be completed in about 16 months.

A.C.M. also has a share in the order for eight freezer stern trawlers from Morocco. The other yard involved is Construcciones Mecanicas de Normandie at Cherbourg. A further four similar ships are being built in Morocco.

Each one will be just under 35 metres long and will be used mainly in trawling for cephalopods.

Main engines will be MAK diesels of 860 hp at 750 rpm turning a single propeller in a Kort nozzle through a Masson ESD800 gearbox. Bopp hydraulic trawl winches will be installed.



## Build anywhere protection vessel design

Three Quays Marine Services Ltd., ENGLAND

SIMPLICITY of construction is the main advantage of a new fishery protection vessel design from the British firm of Three Quays Marine Services Ltd. Although intended for fishery protection within the new 200-mile limit, the design is also suited to a wide range of other naval duties.

## Repaired

The vessels can be both built and repaired in normal commercial yards, which should appeal to hard-pressed shipbuilders. It is also to the advantage of developing countries who may not have sophisticated repair facilities.

## Dimensions

Designed length is 86 metres with a beam of 10.4 m and full-load draught of 3.35 m. Displacement is around 1400 tons and the 200-ton fuel capacity gives a range of 1900 miles at 22 knots (full speed) or 4500 miles at 17 knots.

Main engines would be medium-speed diesels of 6500 hp, but an alternative is two high-speed diesels on each shaft. The main and auxiliary

engines are fitted in two independent engine rooms arranged so that the vessel remains serviceable with one engine out of action.

The basic hull can be equipped for a variety of duties. In its fishery protection role it could carry one or two helicopters, and two rigid inflatable boarding boats. To keep costs down, a minimum of armament is fitted, although this could be added later.

## Madras yard seeks market Cement boat looks right for fishing

Aqua Marine Pvt. Ltd., Madras, INDIA

IN LESS than two years Aqua Marine Pvt. Ltd., of Madras, India, has completed twenty 34ft. (10.4 metre) long GRP trawlers in a modern, well-equipped yard and mould shop.

The vessel shown below displaces eight tons, has a crew of two and a 200ft. 3 fish hold. She is of all-GRP construction with scantlings as recommended by Lloyd's.

Designed for inshore or offshore trawling in waters up to 40 fathoms, her gear handling machinery includes a

two-drum winch mechanically driven by belt off the main engine power take-off. The engine is an Ashok Leyland ALMU 370 diesel developing 66 hp at 1500 rpm and turning a fixed-pitch propeller through a 3 to 1 reverse reduction gearbox.

## Smaller

The yard also includes in its range a 30 ft (9 metre) GRP stern trawler designed for inshore waters down to 20 fathoms. It displaces five tons and can be powered by a choice of engines from 40 to 66 hp.

"Our boats have been fishing successfully in Indian waters," Mr. D. Ramdas of Aqua Marine told FNI. "We are a small compact company of young technicians; we are very conscious of the need to provide quality boats, and we are sure our mouldings are of international standards."

Mr. Ramdas adds that his company is now looking to markets beyond India for its small GRP trawlers. For those interested, it is quoting an FOB price of US\$30 000 for the 34 ft. boat and \$21 000 for the 30 ft. boat.

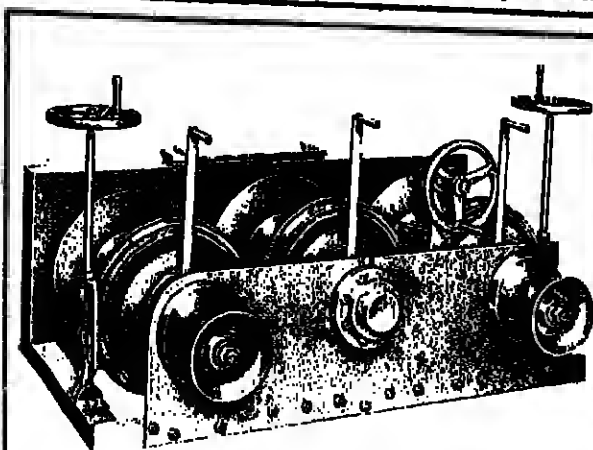
Mangalore fisheries college test prototype

EXPERIMENTS at the College of Fisheries in Mangalore, India, have shown that ferro-cement can be used to build satisfactory small inshore fishing boats powered by either outboard motors or sails.

The Fishery Engineering Department at the College has designed, built and successfully tested a boat with an overall length of 3.12 metres, beam of 1.03 m, draught of 0.36 m and displacement when loaded of 560 kg.

Costs of such a ferro-cement boat are expected to be very much less than similar boats of other materials. The test boat cost Rs621, compared with about Rs1000 for a similar vessel of wood, the traditional material for small fishing craft in India.

Also, ferro-cement boats can be built at the place of use since no elaborate workshop facilities are required. This cuts out the cost of transportation. These boats are also expected to be suitable for inland waters.

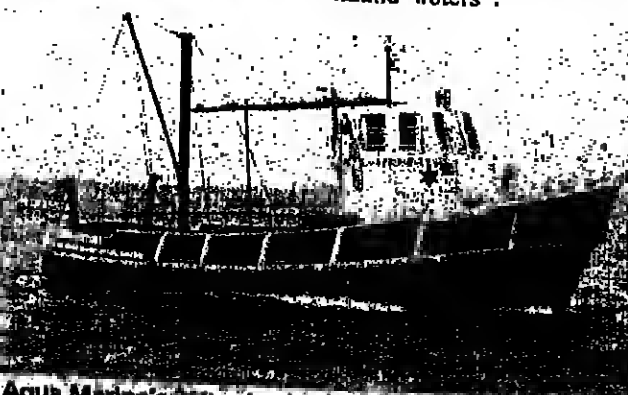


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Aqua Marine's first glass fibre trawler. The Madras yard is about to build boats like this in quantity, and is looking hard for foreign buyers.

## Tunisian fishermen's choice

Cantieri Navali di Luano, Savona, ITALY

AN ITALIAN yard is building wooden boats that are becoming popular in North Africa. Produced by Cantieri Navali di Luano, of Savona, the two designs are suitable for yachts, but most are being sold to fishermen.

The smaller boat has a length of 8.8 metres, beam of 2.7 m, and a draft of 1.40 m. A double-ender with well-rounded stern, it is obtainable in an open version or with either forward or aft wheelhouses.

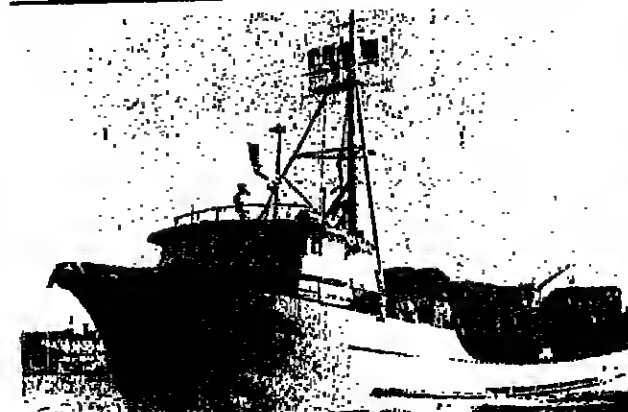
With a length of 12 metres, the larger boat has a beam of 3.45 m and draft of 1.4 m. The shallow draft has been included to appeal to fishermen working from small harbours. It has a more pointed stem and a raked stem with a considerable how flare in keeping with traditional Mediterranean lines.

Both hulls have pine planking on iroko frames. Laminated sections are used for the main timbers. The frames on the larger hull are also laminated.

The 8.8 m. boat is powered by a Baudouin V4 diesel of 60 hp. This gives a speed of 11 knots. The larger craft has a Fiat Alfa Tipo 804 diesel of 65 hp, which also gives 10 knots.

Fishing gear is optional in both models but the smaller of the two is generally equipped with a net hauler mechanically driven off the main engine.

Several of the smaller boats have been sold to Tunisia where a large fishery expansion project is under way. Further orders are being negotiated both at home and abroad.



## Alaska crabbers on time for winter season

Marine Design & Construction, (MARCO), Seattle, USA

TWO 33-metre (108 ft.) long crab boats were delivered by the Seattle yard of Marine Construction & Design Company (Marco) last year in time for the winter season off the Aleutians and in the Bering Sea.

The *Ocean Fury* for skipper Stan Hovik who is partnered by three other Seattle men. She fishes for Universal Seafoods in Dutch Harbor, Alaska. The *Northwestern* (pictured above) is Skipper Sverre Hansen's boat. He delivers to Pacific Pearl Seafoods in Dutch Harbor.

## Seawater holds

With an overall length of 108 ft., the *Northwestern* has a beam of 28 ft. 11 in., loaded draft of 14 ft. 6 in., and tonnage of 195. She is able to carry 85 tons of live crabs in three circulating seawater holds totalling 7500 ft.3.

Propulsion is by a Caterpillar D398 diesel turning a Coolidge 80-inch propeller for a speed of 12 knots. Hydraulic deck machinery, all by Marco, includes a pot hauler and dumping rack, eight-ton Rowe crane and boom winch for pots and cargo. Power is transmitted through two Marco hydraulic pump drives coupled to the auxiliary engines.

## US winches on Congo tuna giants

Soc. Esercizio Cantieri (SEC), Viareggio, ITALY

THE THREE giant purse seiners building for West Africa in the yard of Soc. Esercizio Cantieri (SEC) of Viareggio, Italy, have been equipped with full hydraulic deck machinery by Marco of Seattle.

As reported in FNI (August 1977) the ships are for a firm based on Point Noire in the Congo Republic. This company, SICAPE, has a 51 per

cent Congolese and a 49 per cent Italian shareholding.

The 2000-ton capacity purse seiners are 78.8 metres (259 ft.) long overall, placing them among the world's large tuna catchers. The first, the *Lomgo*, was delivered in mid-1977. The second, the *Mamic* (imgotahovi), at the end of the year, and the third, the *Anzika*, is scheduled for mid-1978.

Marco equipment in each shipset includes a model W10R2 300 hp main winch. This has three main drums, two auxiliary drums and two gypsy heads. Two separate drives power the winch and each has two hauling speeds.

Other equipment includes a model 48A Puritic power block of more than seven tons pull and 81 metres a minute hauling speed.

## Sauna comfort aboard Iceland's new wet fisher

Svolvær Skipsverft, NORWAY

THE TRAWLER *Kamharst*, delivered by the Norwegian yard Svolvær Skipsverft to Icelandic owners Hradfrystihus, Stiddvartjor-dar, has been built to the DivV class +1A1 ice C Stern Trawler.

She is a wet fish trawler fitted with bulbous bow and designed for a speed of about 13 knots fully loaded. Rolling is reduced by installation of an Ulstein passive stabilising tank.

The main engine is a Danish Alpha V12 23L-VO of 1700 hp. The two auxiliary engines of type MVM THD generate 270 KVA.

There are 12 cabins for 18 men, and facilities include sauna.

Main dimensions are: Length overall 47.92 m., length b.p. 41.94 m., breadth moulded 10.20 m., depth to main

deck 4.50 m., and depth to trawl deck 6.75 m., gross tonnage 487, and hold capacity 590 m3.

## Viksund-42

Viksund Baat Nor A/S, Rodskjær, NORWAY

ANOTHER in a popular series of 12-metre (42 ft.) GRP fishing boats has been delivered by the Norwegian yard Viksund Baat Nor A/S Rodskjær, to Arild Jacobsen, Størenfjell.

Electronic equipment includes radar, echo-sounder and radio transmitter, and propulsion is by a six-cylinder 150 hp Volvo Penta engine. Deck machinery comprises two-ton line and net winch and two line coils.

Main dimensions are: Length overall 47.92 m., length b.p. 41.94 m., breadth moulded 10.20 m., depth to main

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## BOATS & BUILDERS

### Matterson cranes—big lift for an all-weather operation

Richards (Shipbuilders) Ltd., Great Yarmouth, ENGLAND.



AT THE Great Yarmouth yard of Richards (Shipbuilders) Ltd., England, six gantry-mounted overhead electric travelling cranes are being used to facilitate the all-weather construction of fishing vessels, including the small trawler pictured left.

The cranes, built by Matterson Ltd. (a member of the Williams Hudson group) are used in purpose-built twin plate and pre-fabrication bays.

Having common spans of 13m the cranes (four of 5 tonnes, two of 10 tonnes) are used at every stage of handling. They are used to position plate up to 50mm thick for profile cutting, to hold cross sections during welding and to transport complete sub-assemblies to the river end of the covered bays.

At that end the cranes provide lifting for all components needed to build the vessels including the engines, winches and superstructures. They are also used to pour the concrete floor lining into the fish room.

Total length of travel is 100 m and the height to eaves within the building is 13 m.

### First of a new class

A 100 ft. (30.5 metre) long trawler for the Wood Group of Aberdeen, Scotland, should be in service by December this year.

Building at Richards (Shipbuilders) Ltd., of Great Yarmouth, the vessel will be the first of a new class. Her

main role will be bottom trawling, although she will also be capable of pelagic fishing.

The trawler will have a 900 hp engine and her fishroom will be 11 ft. She will provide accommodation for a crew of up to 12.



### Merseyside yard's 31-week 'Triumph'

McTay Marine Ltd., Bromborough, ENGLAND.

SKIPPER Ian Murray is seine netting from Aberdeen, Scotland, with his new 76 ft. steel boat *Ocean Triumph II* which was built in just 31 weeks.

The *Ocean Triumph II* was built on Merseyside on the English north-west coast at the Bromborough yard of McTay Marine Ltd. Final fitting out work was handled at St. Monans, in Scotland, by the centuries old boatbuilding firm of James N. Miller and Sons Ltd. — now a member of the McTay group.

The *Ocean Triumph II* cost just over £350 000 and has an overall length of 75 ft. 9 in., and moulded beam of 22 ft. She has three watertight bulkheads and is sub-divided from forward into fore peak.

Her layout is traditional Scottish with the deckhouse aft, and she is equipped for seine and trawling. She will concentrate on seine netting for the time being.

Caledonian Engines supplied her Caterpillar D379 propulsion engine which develops 565 bhp at 1225 rpm. It is coupled to a four-bladed FAL fixed pitch-propeller through a Caterpillar 3.95:1 reduction and reverse gearbox and Fleetwood sterngear.

Electronic equipment in the wheelhouse was supplied by Decca. Fish finding aids comprise Simrad EQ echo sounder, C1 Echo Scope and MC Scale Expander and Storage Unit.

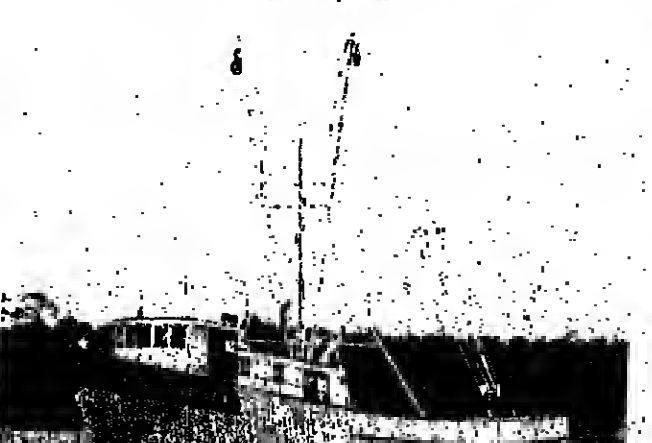
### Zapata buys shrimper

A NEW 72 ft. (22.15 metre) American-built shrimp trawler, recently completed by Diesel Shipbuilding Company of Jacksonville, Florida, has been bought by Mr. D. R. Zapata of Bay Islands, Honduras.

Named *Captain Zapata*, the trawler has a 20 ft. (6.1 m.) beam, 11 ft. (3.4 m.) depth and 9 ft. (3.4 m.) loaded draft. She is powered by a Caterpillar D343 engine supplied by Ring Power Corporation and installed with a Fernstrom keel cooler. Auxiliary machinery includes an Onan 2kW generator driven by the main engine and a Winpower 1.5 kW generator driven by a Lister diesel.

Her 2500 cu. ft. (70.8 cu. m.) hold is cooled by a Turbo Marine freezer. Fuel and fresh water capacities are 16000 and 3200 gallons respectively.

Steering gear comprises a Wood Freeman 1513 autopilot.



The 72 ft. Caterpillar powered 'Captain Zapata'

### Upturn in fortune for GRP firm

Halmatic (Scotland) Ltd., Orkney, SCOTLAND.

A TRADE improvement amounting to about £130 000 worth of confirmed orders is reported by the British boat-building firm Halmatic (Scotland) Ltd. of Orkney, "despite fierce international competition."

Saved from closure earlier last year through regional government and Highlands and Islands Board intervention, the company now has "very healthy" orders for its range of GRP vessels, according to Mr. Pierce Webb, Halmatic's managing director.

"This complete change in our fortunes," said Mr. Webb, "has been the result of hard work in new markets and complete faith in the company's future by all concerned."

Fishing boats on order include three 36 ft. (11 metre) hull, deck and wheelhouse assemblies for Bahrain, Dubai and Saudi Arabia; three 36 ft. part assemblies for Iceland; and two 29 ft. (8.8 m.) hulls for Scottish and Irish customers. A 36 ft. hull has just been delivered to a French client for fitting out.

Other Orkney boatyards affected by lack of orders from the fishing industry will also benefit from Halmatic's success. Now being fitted out locally are the four vessels for Middle East and French customers.

Halmatic also plans to start fitting out work itself by completing a 29 ft. boat for a Scottish customer.

The company has also concluded a licensing agreement with the Icelandic boatbuilding firm Trismidius Gudmundur Larussonar HF of Skagafjord, which is to complete assembly of the three 29 ft. boats.

### Prawn factory trawler for Faroe Islands

Snedvik Mek. Verksted, Trondheim, NORWAY.

A STERN TRAWLER designed primarily for prawn fishing has been built by Snedvik Mek. Verksted of Trondheim, for Faeroese owner Eilert Jacobsen. The ship can also be easily switched to fillet and salt fish production.

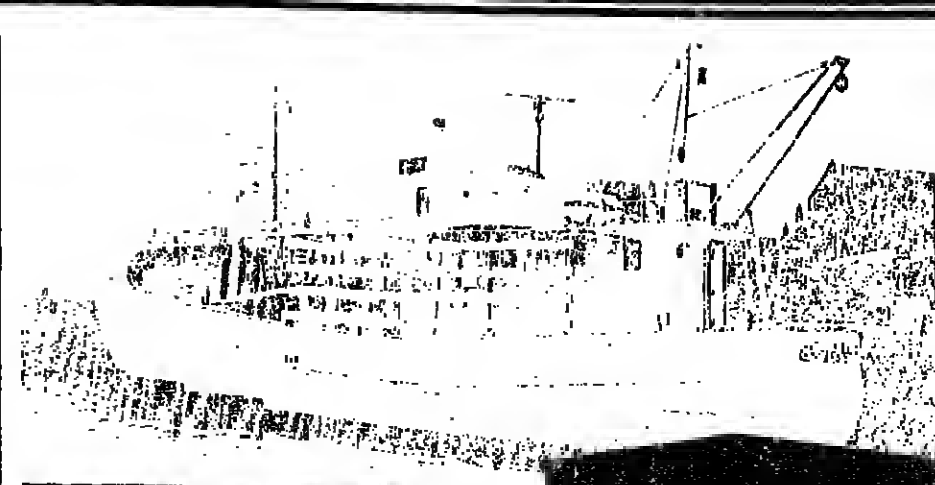
Designed by Fiskerstrand & Eldoy, the trawler, named the *Selberg*, is 57 metres (187 ft.) long overall. Length b.p. is 49 m., breadth moulded 11 m., depth to maindeck 5 m., and depth to shelterdeck 7.35 m. Accommodation is arranged for 34 men, with six single and 14 double cabins. There is also a sick bay.

The factory plant is fully mechanised for sorting, conking, freezing, weighing and packing. Capacity is 40 tons frozen product in 24 hours. The freezer hold maintains a temperature of -30 degrees C.

Her 550 cu. m. cargo hold is refrigerated by means of hot-galvanized steel rib-tube elements under deck. For freezing in tropical conditions, if this is required, three vertical 25-stall and one 12-station Jackstone plate freezers have been installed.

RSW cooling plant is installed in two tanks using two Shell & Tube/Lehmkuhl coolers.

The 2800 hp main engine gives a top speed of 13.6 knots. Deck machinery is by Hydraulic Bruttvaag.



THE 24.7 metre (81 ft.) long wooden hulled vessel *Rivo*, pictured above, has been bought from Sweden to go white fish and sprat trawling off Scotland. Her new owner is Skipper Malcolm Macaulay of Rosneath, near Fraserburgh. Built in Sweden 11 years ago, the cruiser-sterned vessel is powered by an 800 hp Blackstone engine turning a controllable pitch propeller.

### Seiner trawler order during lean times

Aurling Verft A/S, DENMARK.

DANISH fishermen are taking advantage of lean times in the industry to overhaul their fleets.

There is very little new construction under way. The future is too uncertain for that. But the Danes are rebuilding or modernising many of their older boats.

Several vessels are being fitted with new wheelhouses and deck machinery, and Alpha Diesel, supplier of many engines for the fleet, report a number of enquiries for re-engining.

As part of a comprehensive package of energy conservation measures the Danish government is making grants of up to 40 per cent of the cost of fitting propeller nozzles to fishing boats. The idea is that boats will require less power to haul their existing gear, but it fails to take into account the increased drag created by a nozzle when the boat is running free. The energy saved when fishing could thus easily be lost in steaming to and from the grounds.

However many Danish fishermen are taking advantage of the offer.

One of the few areas where orders for new vessels are being placed is distant water fishing. Two Danish owners have each ordered a 54-metre combined trawler purse seiner.

The two vessels are being built at Aurling Verft A/S, a new firm in the fishing boat market. They are due for delivery in July 1978 and January 1979.

They will be the first large fishing boats to built in Denmark for a considerable time.



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### Vessels to cash in on shrimp recovery



THE 73 ft. (22.25 metre) long Texas-based wooden shrimp trawler *Singleton Fleets 8* is one of the first five boats to be completed against the biggest single order yet received by the US boatyard, Desco Marine of St. Augustine, Florida.

Worth \$3.5 million, the order was placed by Singleton Shrimp Inc. of Tampa. Eventually Singleton plans to acquire some 50 boats, by new building or buying second-hand.

Although Freeport, Texas, will be the base of the fleet for most of the year, the main Singleton plant is in Tampa. The company is also expanding its facilities at Key West in Florida, where a \$1-million ice plant is being built on Stock Island.

Like other boats in the order, the *Singleton Fleets 8* is a standard Desco wood vessel, with a beam of 20 ft (6.1 m). Her shrimp winches are a 520DD and a 501A Stroudsburg.

The main engine is a Caterpillar 3408 diesel developing 365 hp and turning a Columbian 64 by 46 in. propeller through a Twin Disc 6 to 1 reduction gear.



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## PORTS & MARKETS

### Anchovy — just a few tons more

PERU was last month trying to squeeze a few more anchovy from the sea in order to reach a target of two million tons of combined anchovy and table fish for meal processing by the end of the year.

The Ministry of Fisheries authorised anchovy fishing, banned off the rest of the coast, in the far south from November 14. The area was not affected by the warm Niño current which helped decimate anchovy stocks off the rest of Peru.

But catches were limited to 100 to 200 metric tons a day.

The Ministry also banned all industrial sardine fishing from November 14, although fishing of hake and mackerel and other table fish for meal was allowed. By the beginning of December this was taking place out of Chimbote, on the northern coast, where sardines were mingled in the catches. Estimates ranged widely between 1000 tons and 5000 tons a day, although marketing sources said catches had dropped to nearer 1000 tons by the end of November.

● Fish meal production amounted to 427,500 tons in 1977, with an estimated FOB value of 178.8 million US dollars. Production in 1976 was 626,204 tons.

### Taiwan scheme gets go ahead

PLANS FOR a new 16 million dollar fishing port at Taichung in Taiwan have now been finalised. According to Mr. Chen Ming-cheng, director of the Taichung Harbour Bureau, construction is to start in mid-1978 and end in 1982.

As part of a larger harbour construction scheme, the fishing port project is being given priority due to a rapid growth in the Central Taiwanese fishing industry. Pressure is also mounting from boat owners based at Suao, Keelung and Hualien to use the new port.

Covering an area of 17 hectares, the harbour will be able to accommodate more than 1000 vessels.

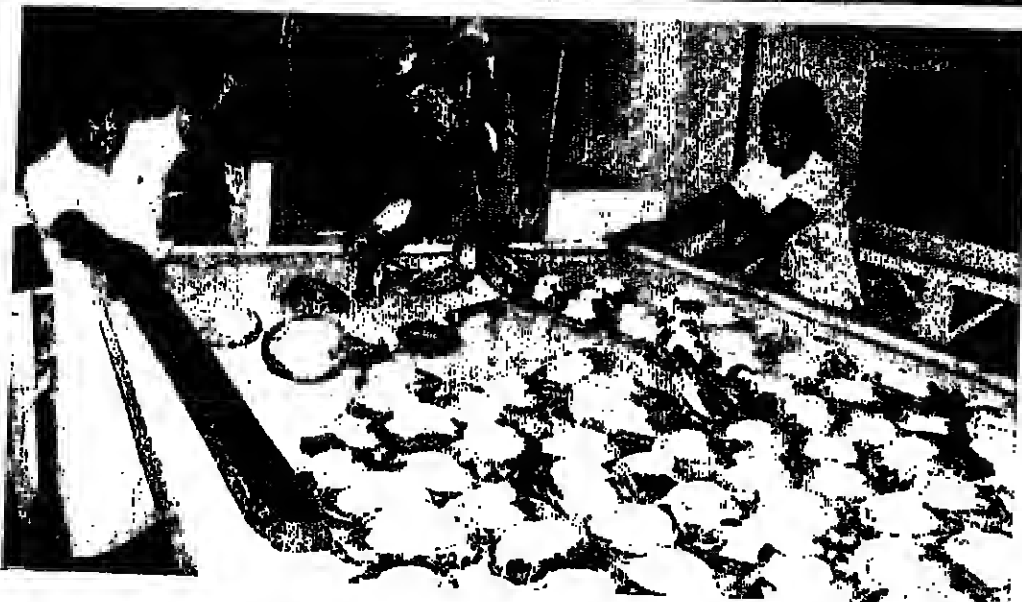
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## Big demand for California's new specialities

TWO YOUNG brothers in Southern California are building a thriving business by processing some of the more unusual and under-utilised species of fish and shellfish found off their coast.

Harold and Larry Pender set up Santa Barbara Seafoods Inc. about six years ago, rockfish, shrimp and spot prawn, and added products based on swordfish, shark, aquid and giant sea bass to their rapidly growing range.

But abalone has remained the mainstay of the company. Not surprisingly, perhaps, because the brothers began by diving together for the big shellfish in 1969.

Now they process and export abalone roe and sell the popular shellfish at home from San Francisco to San Diego.

Twelve boats listed on the blackboard in the Santa Barbara Seafoods' office deliver regularly, keeping a processing line of a dozen men and women busy. Of the twelve vessels, two are swordfish boats, four are dragger and six abalone dive boats.

The brothers share the running of the plant: Harold manages the factory; while Larry handles the marketing. Their experimentation and product promotion has paid off for all involved, including the consumer.

One of their latest products is based on the 'Jumbo Red Squid', *Dosidicus gigas*. It is made by sectioning the skinned mantle of the animal and passing the steaks through a tenderiser and bread.

The four to six ounce steaks were hard to sell at first, but now the problem is keeping up with demand. The flavour is comparable to abalone, they say, and the price difference has been large enough to help in its promotion during the sluggish supply of high-priced abalone.

Harold Pender reports that abalone has had an improved year both in growth and quality. The new, limited entry into the fishery through the 200-mile limit has not yet had time to affect the industry's economics. It has built confidence for the future.

The total poundage is reported to be down due to a number of factors but good divers are doing well and price is at an all-time high.

California abalone still outsells those from Mexico where, we are told, size and quality is poorer due to stock depletion.

### Penders bring in 'jumbo squid' steaks

For an industry not recreation oriented to hold its own at a California waterfront is a continuing problem.

But the Pender brothers are keeping pace. In June last year Santa Barbara Seafoods opened a retail shop at the front of the plant where the attractive display is becoming depended on as a source of fresh California seafood for the Santa Barbara dinner tables.

### B.C. herrings find new outlets in Europe

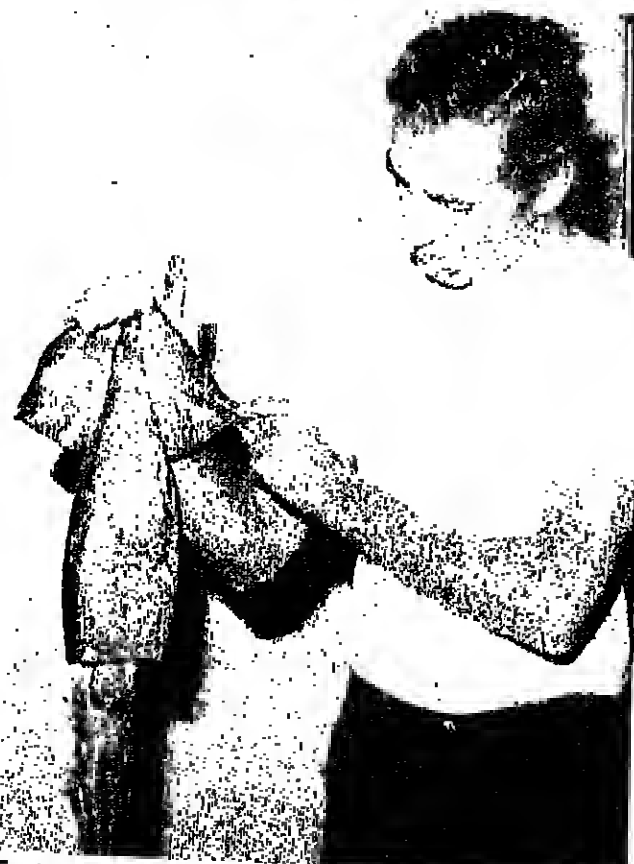
BRITISH COLUMBIA, noted for its lucrative salmon fishery, is building up a food herring industry. The herring are being shipped to Britain, Europe and Japan frozen in 50lb. boxes.

The west coast Canadian province has had a small herring fishery for many years. It totalled about 7,500 tons in 1976. Last year, because of the decline in the North Sea herring fishery, the fall in value of the Canadian dollar, and the 200-mile limit, the call for herring has increased. It is estimated that at least 15,000 tons will have been sold in the latest season.

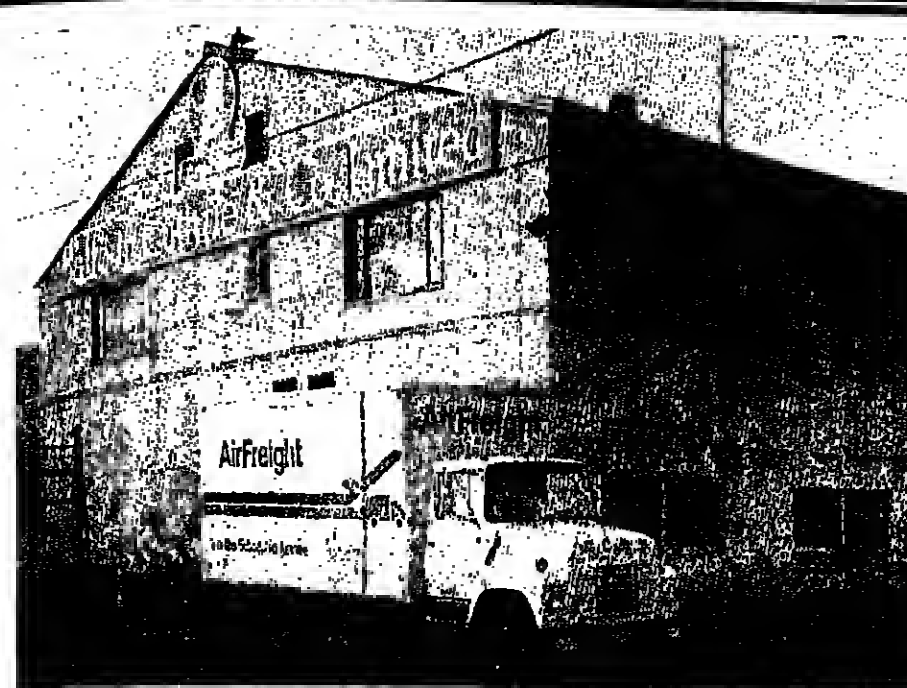
Ever since the pioneer days, British Columbia has had a roe herring fishery, supplying Japan, where the product is a delicacy. The roe fishery takes place in the early spring. The unused portion of the fish goes to milk feed and meal plants.



Inside the Santa Barbara Seafoods factory: Left: A new batch of meaty abalone is tipped on to the shucking table. The Southern California processing firm began with abalone, which is still its mainstay. Above: Marketing manager, Larry Pender, wrestles with another giant sea bass, one of the more unusual species that the firm handles. Giant sea bass mature at about eight years old and can grow up to 400lb.



Factory manager, Harold Pender, with a 'jumbo red squid', *Dosidicus gigas*, cut from the skinned mantle of the animal taste just as good as abalone. They are becoming so popular that the brothers are hard put to keep up with demand.



Another truck load of fish from Balfour, Guthrie is set to be jet freighted abroad.

### Washington plant booms after UK takeover

FOUR YEARS after being taken over by a British concern, Everett Fish Co. of Everett in Washington has quadrupled its size and is still growing. It is now the Fish Department of Balfour, Guthrie & Co. Ltd., of London.

Last year, half-a-million dollars were invested in doubling cold storage capacity and in adding a large freeze-packing and dry-storage room.

The company is now looking for more boats to reinforce its fleet of three inshore and three near water trawlers.

It markets a complete range of fish products, including fresh salmon and bottom fish. Many are original Everett speciality lines.

Earlier this year, its chill store was stacked high with barrels of salted salmon and cod for traditional customers and for the Orient.

#### Exports listed

Besides exporting salted products for further processing, the company markets hot and cold smoked products, including salmon, cod and halibut.

Other species on the list are Dungeness crab, shrimp and Alaska king crab. Everett may also be the largest packer of frozen steamer clams anywhere.

Balfour, Guthrie — a worldwide trading concern — is itself a subsidiary of Dalgety, a large London organisation with interests in Australia, New Zealand and the United States. The Balfour, Guthrie Fish Department at Everett is, as yet, the group's only venture into the fishing industry.

### Deepsea base near Bombay

THE GOVERNMENT of the Indian west coast state of Maharashtra plans to build a deepsea fishing harbour at Agardanda, south of Bombay.

The project may take two or three years to complete. It includes a 1000 metre jetty and facilities for repairs, ice-making, cold storage, freezing and fish meal production.

The state government has already provided an 82-acre long jetty to serve deepsea vessels.

It also wants to construct a new operating at Sion Dock in South Bombay to shift to Dighi. The dock itself is to be expanded by constructing a wharf 350m long and three deep. About 400 boats operate from this congested dock daily.

### Angola 'doubtful' as a market FRESH FISH TO U.S. BY AIR

NORWAY achieved large sales of klipfish to Angola in 1977 but prospects for 1978 are doubtful. An exporter who recently visited the country told the fishing journal *Fiskaren* industrial production in the former Portuguese colony had ceased and that farm output had fallen by 70 to 80 per cent.

The volume of imports was restricted partly by lack of port capacity, and 30 to 40 ships were lying off Luanda waiting for berths.

Despite economic and social problems following independence and the destructive civil war, the exporter thought that Angola presented a "stimulating challenge" to Norwegian industry. Its once big fish meal industry, for example, was completely shut down but the new fishing zone covering an extremely rich resource should support its eventual revival.

Fishing is the main economic activity of the southern province of Mocimedes and employs about 10,000 people there, half of them at sea. But, in a recent survey, the Economist Intelligence Unit, noted that the local fleet, operating out of Mocimedes and Porto Alexandre, lost many vessels during the civil war. At least 60 were taken to South West Africa, Portugal and Brazil, by white settlers fleeing the country, leaving about 100 in the ports.

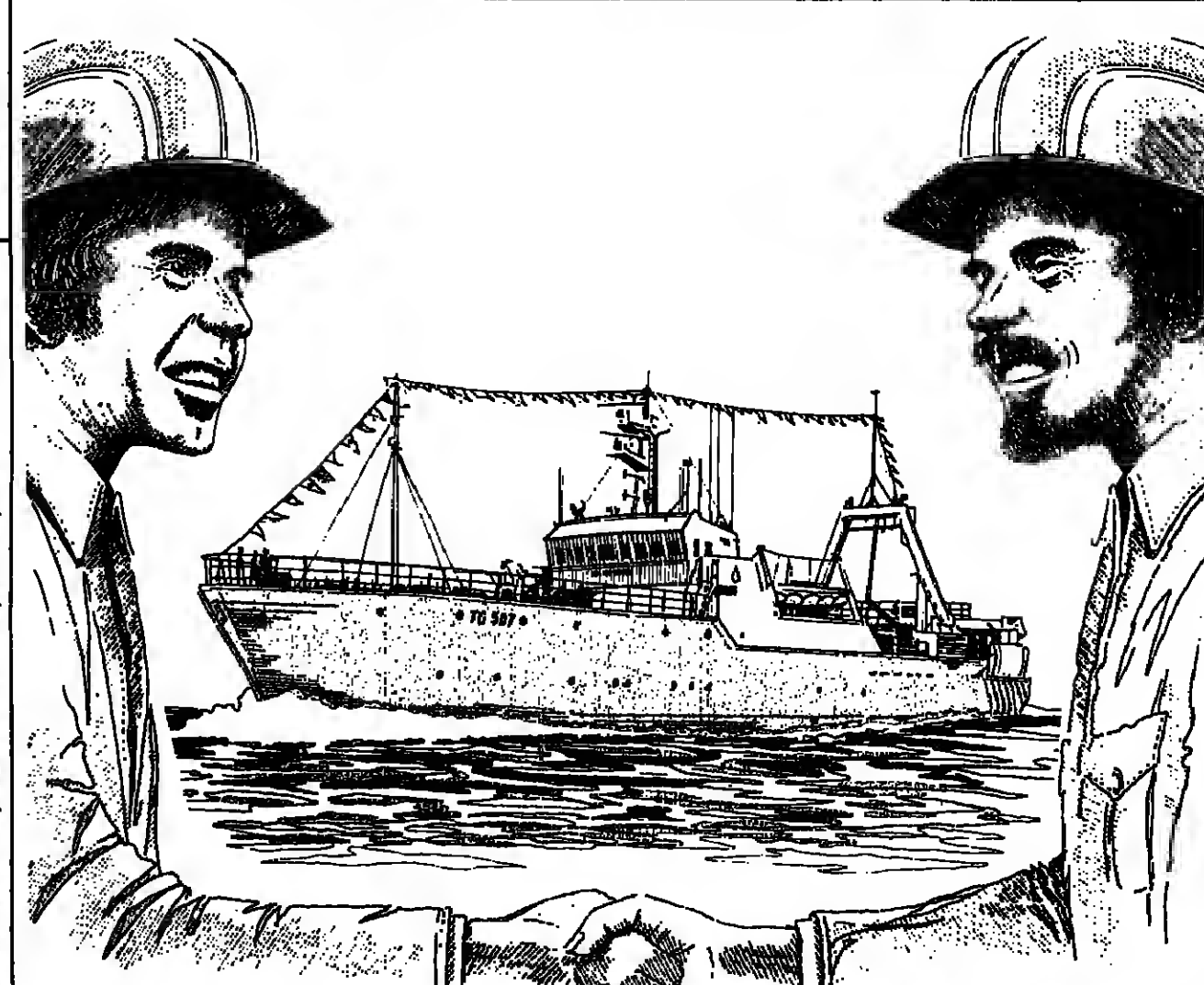
#### Revival

Early in 1977 monthly catches were only around 2500 tons but efforts have been made through the year to revive production. At Porto Alexandre, for example, the government is reported to have restarted 13 factories, one of them producing fish meal, three of them canneries and two freezing plants.

LAST MONTH a ton of Norwegian fresh-caught fish was flown to Baltimore in an attempt to open-up a market in the United States, already a big market for Norwegian frozen fish. The consignment of cod and haddock fillets was packed in special cartons for air transport.

The fish was on sale in Baltimore the day after leaving Bergen.

If this trial consignment proves satisfactory, it is intended to establish regular fresh fish exports to the USA from January-February 1978, said Johan Muri, Director of the Fresh Fish Export Committee.



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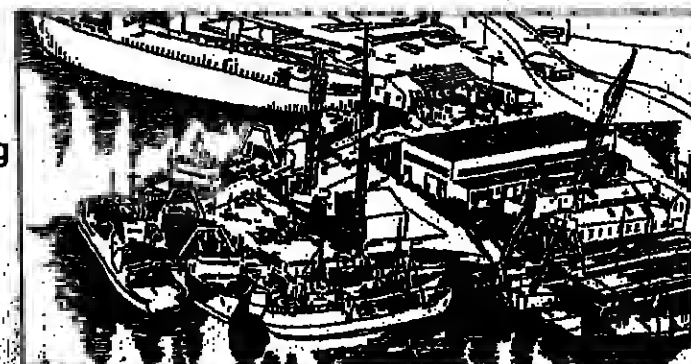
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## PORTS &amp; MARKETS

## Norway to cut capelin catch

THE Norwegian 1977 catch of northern capelin of more than two million metric tons has set a record that may last for years. The Russian share of the Barents Sea haul of this small fish has been increasing steadily, and the Norwegian and Soviet governments have recognised the need for conservation quotas. For Norway, the quota in 1978 may be between 14 and 16 million hectolitres (one hl of fresh capelin equals 97 kg). As noted last month, the USSR catch may exceed 800,000 hl and in any negotiations over capelin the Russians may insist on a similar figure.

Since the collapse of the Atlantic-Scandinavian herring fishery, capelin has been the main raw material for Norway's large fish meal industry. Last year, almost the entire catch of 21.31 million hl (nearly 2.1m. tons) was reduced to meal, with only small volume export of capelin roe to Japan. This use for meal accounts for the relatively low landed value of the catch of 650m. NOK (about £65m.).

Efforts to develop a large-scale food use for capelin, by canning or some other known process, have so far proved unsuccessful.

However, this has not prevented the more successful capelin fishers from making high earnings, up to £20,000 a crew member on some purse seiners.

Iceland also enjoyed a record year for capelin in 1977 with a haul of more than 700,000 tons.

With this supply, her meal industry now sees a need to modernise plant which has been neglected since the collapse of the herring fisheries ten years ago.

● The proposed total quota for Norwegian winter capelin fishing in 1978 has been set at

11.5 million hectolitres (about 1.2m. tons). Purse seiners are to get 9.5m. hl and trawlers 2m. hl. In the winter and spring of 1977, Norwegian vessels took just over 1.4m. tons.

The Russians plan on taking about 700,000 tons and, as reported on page 56, have allowed Faroe fishermen a quota in their zone of the Barents Sea.

If quality and size meet market requirements, Norway hopes to sell between 5000 and 6000 tons of capelin to Japan in 1978. This should earn about £3 million.

## MORE FISH FOR FOOD

SPEAKING at the Tromsø conference, Fisheries Minister Eivind Bolle predicted that the amount of fish for human consumption in the Norwegian catch would increase. Earnings would, therefore, rise, even if the volume stayed the same or declined.

Norway's long-term programme calls for an increase in high-value consumer fish (cod, saithe and haddock) by about 100,000 tons in 1980 and 250,000 tons in 1985. This would be an improvement of up to 40 per cent on present quotas.

To protect immature cod, Norway wants to increase mesh size, but has not yet succeeded in getting the agreement of the USSR.

## Canners lagging behind

CANNED fish is still lagging behind other Norwegian fish exports. There has been a slow recovery since 1975, when sales of bristling, sild and kippers all slumped, particularly on the United States market, but sales remain below the 1974 peak.

Up to the autumn of 1977, exports of bristling were 180,000 cases, sild 677,000 cases, and kippers 220,000 cases, compared with 208,000, 825,000 and 390,000 cases in the same period of 1974.

Last year's exports up to the autumn were 112,26 tons worth 143 million NOK (£14.3 million), with the USA buying more than half. The other principal markets were Australia, Britain, South Africa, Canada and Sweden in that order.

## Korean fishing boost

DURING the Fourth Five-year development plan (1977-81), South Korea expects to invest the equivalent of more than US\$400 million in coastal fisheries. This is expected to boost total production from 1.6 million to 2.5 million tons.



Packing fish fillets for freezing in a Northern Norway factory.

## Fillet exports—prospects look bright

NORWEGIAN fish exporters report record sales abroad in 1977, and 1978 prospects are also bright. Frozen fillet prices rose by 30 per cent so that export earnings comfortably exceed the 660 million kroner (£66 million) of 1976. Main markets are the USA and UK. Exporters warn, however, that further progress in 1978 depends on a number of factors, in particular an adequate supply of fish to the freezing plants. Labour availability is also causing concern, and increased automation is foreseen.

In the long term increased competition may be expected on traditional markets from developing countries. This may force down the prices which Norway and other traditional exporters of fish fillets have been getting.

Exports of fresh and round-frozen fish and crustaceans were also buoyant in 1977 with total sales of 31,000 tons worth 350 m. kroner FOB, compared with 272 m. kroner in 1976.

Exports of klipfish were hit by import restrictions in Brazil, but Angola became an important new market so that in the first eight months sales were 40,000 tons against 33,000 tons in the corresponding period of 1976. Exports of salt fish were also up in 1977 at 10,000 tons, compared with 8,000 tons in 1976.

Dried fish sales were hit by the reduction in Nigerian intake from 18,000 to 2,700 tons. Exporters are confident, however, that Nigeria will again prove a valuable market when industrial investments have been completed and imports of consumer goods are liberalised. Italy, the USA and Australia took about 8,000 tons of dried fish from Norway in 1977.

Exports of fish meal and oil—

earned a record 1600 m. kroner (£160 million) in 1977, compared with 1300m. kroner in 1976 when 427,000 tons of fish meal and 230,000 tons of fish oil were produced.

Prices have improved despite the record harvest of soyabean. The anchovy catch slump in Peru has meant increased demand for Norwegian supplies.

While exporters report strong demand abroad, Norway's own fish consumption has dropped sharply in recent years. A survey shows that from 1954 to 1974, domestic fish sales fell by 30 per cent, while meat consumption in the same period rose by 40 per cent.

A small inshore fishing vessel leaves her port in the Lofoten islands. It is boats such as this that will benefit from a growing share of food fish in the Norwegian catch.

## Port project in Tanzania

A JOINT Norwegian-Tanzanian fishing complex project in Tanzania should be completed by the end of 1978, according to project manager Mr. Eiling Schaug Johansen.

Aimed at modernising Tanzania's fishing industry, which now produces about 180,000 tons a year, the project at Mbegei will cost £1.8 million. Plans include construction of a fishing harbour and marine workshop. There will also be a fish receiving station with netting, slipway and boatyard.

Mr. Johansen said that the *Maunzu*, a 115-ton research and training vessel, will play an important role in the proposed training programme at the Mbegei Fisheries Development Centre.

Training will include five three-year courses for master fishers, boat construction, marine engineering, fish processing and marketing, and refrigeration engineering.

At present, 100 people work on the project. When it develops, numbers will rise to 250, including 12 Norwegian experts.

## Money to double skipjack catch

SURVEYS around the Solomon Islands in the South Pacific show that, with adequate investment in boats and processing plant, the 1976 catch of 16,000 tons of skipjack tuna could be at least doubled.

Encouraged by this, the Asian Development Bank is to provide a loan of U.S.\$3.6 million to the Solomon Islands. It will help towards a \$5.9 million plan to boost production and to increase the amount of local employment, management and ownership in the skipjack fishery.

In 1976, fish became the largest single export of the islands, accounting for just over a third of its total outside revenue. From 6,500 tons, worth \$2 million in 1973, output rose to 16,000 tons, worth \$8 m. in 1976.

## New boats

In the next stage of development, funds will go towards the local construction of 10 skipjack pole and line boats and 20 bait fishing boats. Consultancy services will be provided to help in their construction. There will also be help in the initial management and fishing operations of National Fisheries Developments Ltd. (NFDL), the company formed to carry out the new project.

The pole and line boats will

## Time runs out for Germany

ON November 28 West Germany's agreement with Iceland to take 60,000 tons a year inside the 200-mile limit expired.

Like the earlier agreement with Britain, this is not likely to be renegotiated.

The loss of this catch from a German total of around 425,000 tons could lead to a sharp rise in prices.

## More in shrimp fishery

A WORLD BANK loan of U.S.\$7.5 million is helping to finance a \$12.6 m. project to develop Panama's shrimp industry. The project is to expand and improve the country's fleet of shrimp trawlers as well as provide processing plants ashore. It is expected to boost seafood exports and to create opportunities for another 200 jobs.

The development project should assist the improvement in foreign sales of shrimp to continue.

## Soviet venture in Singapore

A SOVIET-BACKED joint venture in Singapore is to build large, modern processing and storage complex. The development will cost around U.S. \$12 million.

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The following year it negotiated its first fish supply contract with the Soviet organisation Prodlintorg for 8000 tons. The supply was reported to have been increased in 1977. By 1979, it is expected that Prodlintorg will be buying around 27,000 tons of sea products.

The new complex, to be situated in Jurong, will take in 1 direct from trawlers and process it into a wide range of "convenience" food packs, such as fish cakes and fish sticks.

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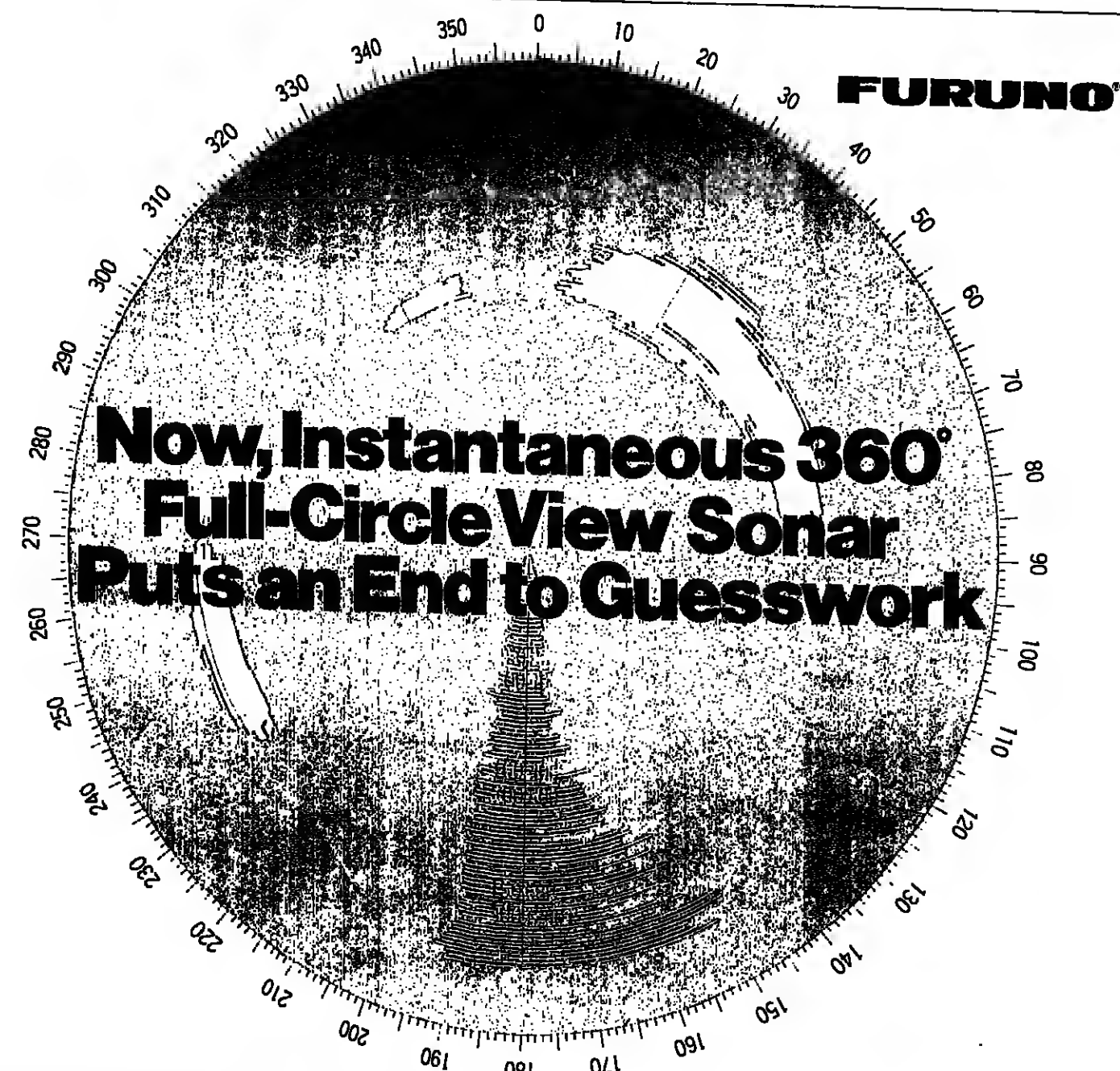
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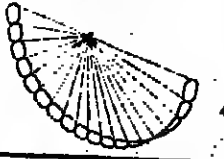
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## PORTS & MARKETS



Mr. Tom Geoghegan

# Ireland—sweeping new quality controls soon

A COMPREHENSIVE quality control programme for all marine fish and shellfish, fresh and processed, is expected soon to become law in Ireland.

The new regulations, which involve the licensing of processing plants, are being pushed through by Minister for Fisheries, Mr. Brian Lenihan.

One of the main objectives of Ireland's fishing industry is to develop added-value exports through increased processing ashore. This will mean promoting Irish fish and fish products on some of the most consumer-conscious markets in the world, so it is vital that the industry is

seen to be giving top priority to the raising of quality standards.

According to Mr. Tom Geoghegan, Market Development Manager of the Irish Sea Fisheries Board, the new regulations, which will affect fishermen and processors, will ensure that the highest standards of handling are observed from the time the fish is caught, right through to sale on the home market or to the point of export.

They will "facilitate the introduction in certain speciality markets in Europe and elsewhere of branded fish products under a Quality Irish Label."

"As soon as the regulations for shellfish and pelagic fish come into effect," said Mr. Geoghegan, "it will then be possible to get the second stage

of the new quality control programme under way. This concerns the setting up of quality standards for processed fish of all kinds, and the licensing of premises for the production of these products."

The licensing of the plants will be a totally new requirement, but it is reported to have the full backing of the industry. "Each of the plants will be issued with a certificate of health," said Mr. Geoghegan, "and this will be a tough one."

Overall, there has been a considerable improvement in the quality of Irish fish in recent years.

This has largely been due to steps taken by BIM to introduce ice-making facilities into at least 16 ports.

### Giving way

Bulk storage at sea is giving way to an increased use of pounds and many of the crews are going over to plastic fish boxes. Especially since the development of the mackerel fishery.

On the demersal fishing side, regulations governing the handling and presentation of fish have been in force for some years.

However, there is widespread approval for Mr. Lenihan's new measures, since the general consensus in the industry is that there is still room for improvement in quality at all levels.

John Holland, of Galway

## DAVID GLEN reports on Ireland's latest move to promote fish exports

Buy Seafoods, goes as far as to say that quality control at quayside is "a bit of a joke." Fishermen, he explained, have been known to land third-day fish on top of the first day's catch unknown to the processor.

Jim O'Connor, Chief Executive of the Irish Fish Producers' Organisation, accepts that "there has been a lack of implementation of proper handling regulations" as far as the fishermen are concerned.

### Dying out

"Due to the relatively small size of the fleet," he said, "ice has not been available in sufficient quantities. Also, there has been an attitude among fishermen — now fortunately dying out — that, as they were operating for the most part on a daily basis, there was no necessity for ice."

"Another factor has been the irregular supply situation which has meant that badly handled fish, at a time of scarcity, could fetch as much as good fish."

"We have been pushing for quality all along, and we are going to continue to push for it. We will be quite unsympathetic if any of our members are prosecuted for not adhering to the new regulations. But we want to see the same standards applying throughout the industry."

"One thing we are not satisfied with," added Mr. O'Connor, "is the lack of effort on the part of the people responsible for ensuring the implementation of such quality controls as do exist."

## Firm expands to meet demand

PRAWN SALES at Moreton Bay Seafoods Pty. Ltd. have increased so much that the Australian firm has had to expand its factory in Clontarf, Queensland.

Prawns are sorted and individually quick-frozen in a brine solution. The process, which lasts six to ten minutes, covers the prawns with a salt glaze.

Factory manager, Tony Horeman, said that prawns could be on their way to Sydney just four hours after delivery.

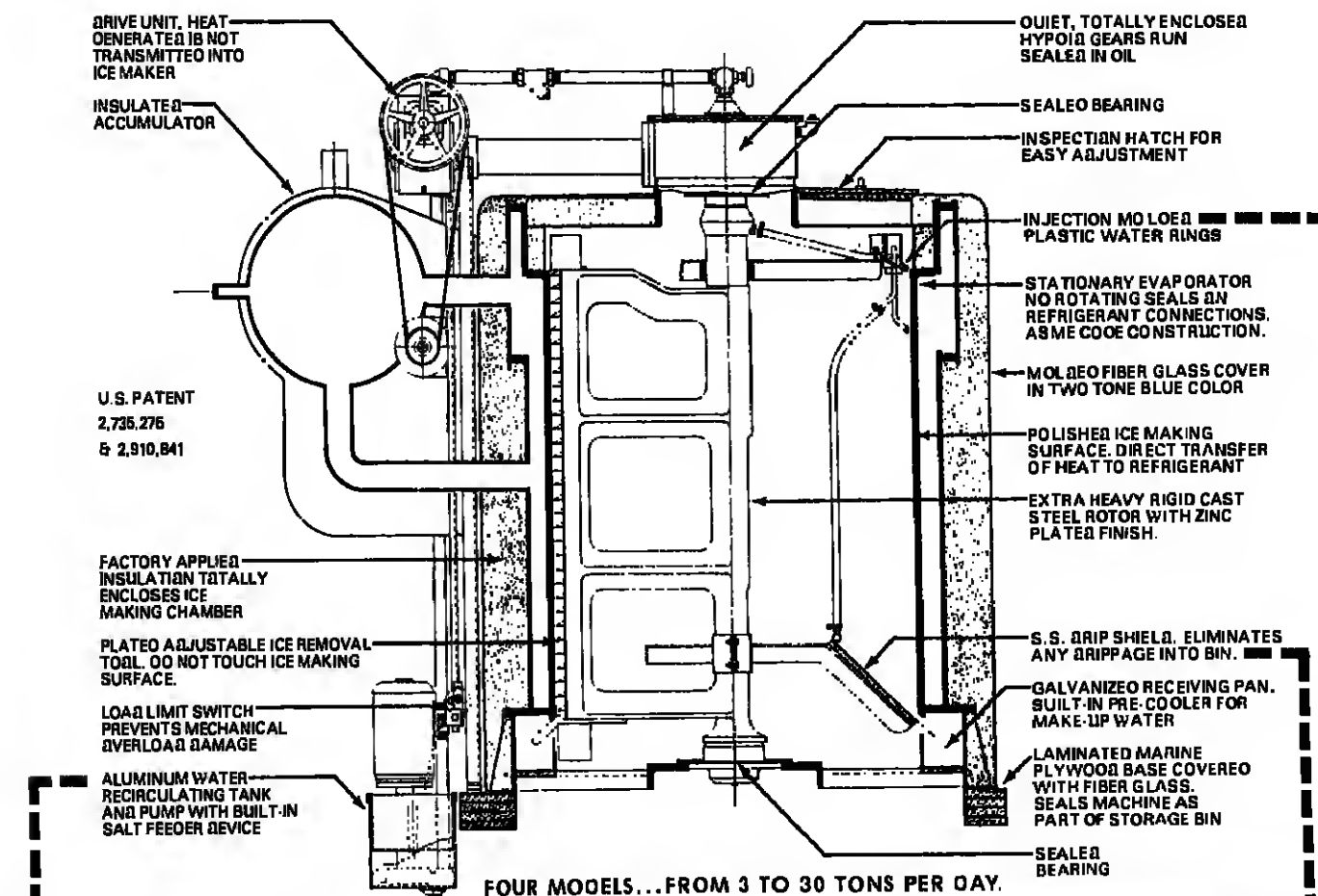
Growing demand from Sydney has led to the appointment of a salesman there, although other markets are still serviced by telephone.

Present products include standard size prawn and cutlet packs. These cover 2 kg. individual packs and 20 kg. master cartons, with cutlet sizes ranging from under 10 per lb. to 35-40 per lb. With a new blending machine, products will be marketed in a green or breaded form.

Looking to the future, Mr. John Cavanagh, one of the firm's directors, said that Moreton Bay Seafoods had held a conference in Brisbane to set up guidelines following Australia's introduction of a 200-mile fishing zone.

"We will be looking for joint venture partners to develop and process new fish, prawns and shrimp stocks available within our region," he said.

## 3 New Water Control Features for North Star Ice Makers

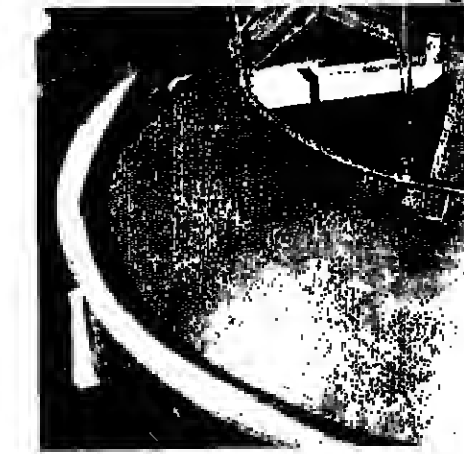


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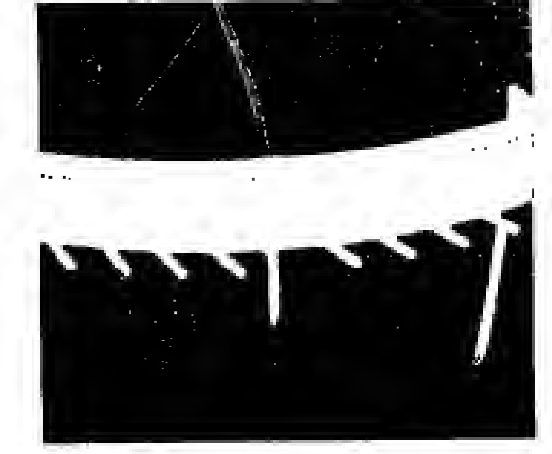
### Salt Feeder

The 5088 aluminum salt-water resistant tank has been enlarged to include a removable salt feeder tank and fittings to divert pump water into the salt tank. To activate the system, the operator simply fills the salt tank with salt and adjusts water flow accordingly. Use of the salt feeder improves ice removal and increases the size of the average flake.



### Drip Shield

The rotating stainless steel drip shield positioned below the freezing surface of the ice maker covers the complete arc of the water rings. It deflects any water drippage from the freezing surface or from the water rings back into the receiving pan for recirculation. Thus, the drip shield completely eliminates water drippage into the ice storage bin.



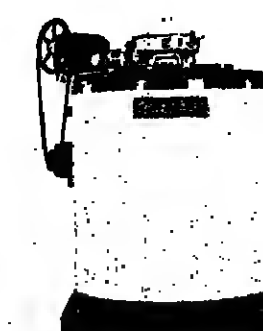
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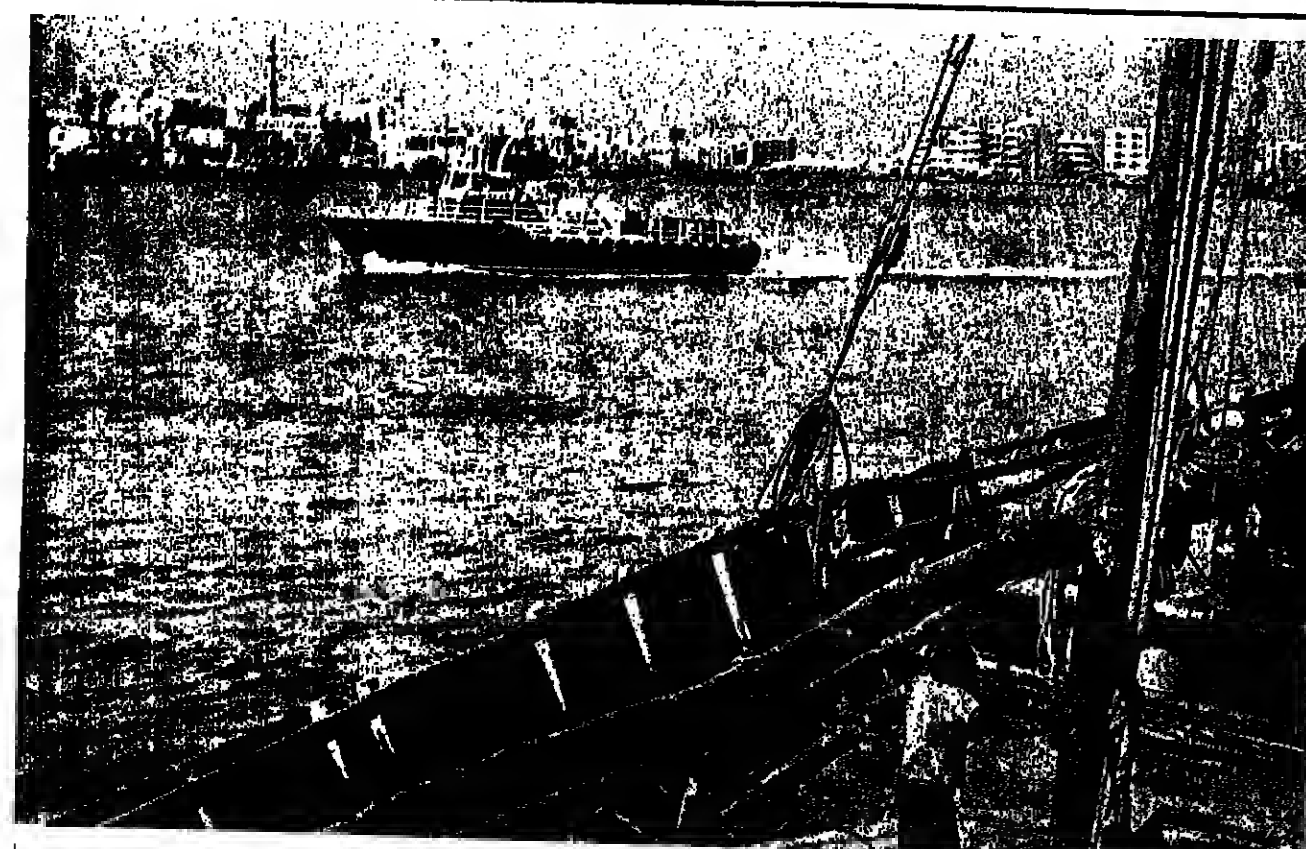
Can Antarctic waters be made to support salmon as abundantly as those of the North Pacific? On the answer to this may depend the future pattern of food fish supplies. And an answer is being sought, first in the streams and the rugged coast of southern Chile, and perhaps later in Argentine, the Falkland Islands and other favourably-placed lands in the far south. In this, the first part of a special report for FNI, Dr. Timothy Joyner, one of the foremost exponents of salmon seeding in southern waters, describes earlier attempts in Chile.

Next month he explains why these attempts may have failed through wrong siting. He also describes the ocean conditions which give so much hope for the future production of southern salmon.

# CHILEAN SALMON BASE

## —the dream and the reality...

A COOL, wet climate. Mountains, glaciers and lake-dotted lowlands. Snow-fed rivers flowing into a maze of sounds, channels and fjords. These features inevitably evoke from visitors to southern Chile comparisons with the salmon-supporting regions on the north-west coasts of North America and Europe.



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Chileans have long dreamed of introducing salmon into this remote, little-developed region in the hope that each year they would bring the riches of the open sea within reach of coastal fishermen. The dream has been doubly reinforced: first, by the successful introduction into Chile from Europe of several species of trout that are close relatives of salmon; and second, by the successful introduction into New Zealand of a true salmon, the quinnat (chinook), from California.

Introductions of salmon and trout began in Chile in 1905. The first shipments, from Hamburg, Germany, contained fertilised eggs of rainbow, brown and brook trout and Atlantic salmon. Subsequent shipments of coho, chinook and sockeye salmon eggs came from the United States. During the first third of this century, hatcheries were constructed in Chile and the fry of many species of trout and salmon were planted in rivers and lakes between 33 deg. and 42 deg. S. latitude.

The introductions of trout were a stunning success. They exploded into ecological niches left vacant after glaciers devastated freshwater life during the last ice age. Aided by diligent sports fishermen, who carried seed stocks into remote areas far beyond the reach of roads, trout have spread to nearly every stream between the central Chile and Cape Horn — a distance of over 2500 km.

In the far south, many of these trout, especially rainbows and browns, are apt to take up sea-run life. They leave their native rivers to feed on the abundant plankton in the channels and sounds of the Chilean archipelago. When they return to their spawning streams, many of these large, red-fleshed sea-run trout weigh over five kilos.

These specimens, called "salmon" by local inhabitants, are highly prized by sport fishermen. At Puerto Bories (51 deg. 45'S) on the Admiral Montt Gulf, they are frequently caught by commercial fishermen as they move through a narrow pass toward their spawning beds in the Rio Serrano.

With salmon, on the other

### PART 1: early efforts

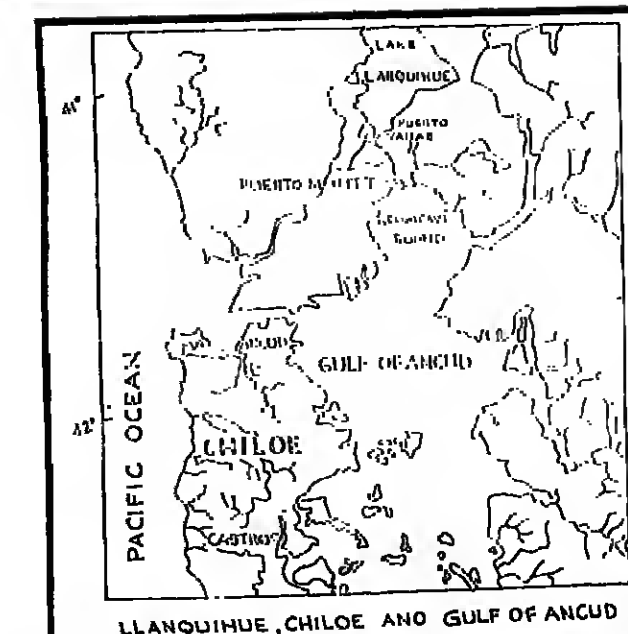
hand, all attempts at introduction have failed. Between 1905 and 1938 there were repeated plantings in Chile of Atlantic, coho, chinook and sockeye salmon. The record is woefully incomplete. Dates and numbers of eggs of different species appear in some of the old hatchery records. It is possible, however, to make educated guesses about the rivers in which the fry were stocked.

Because the capability for long-range transport of significant numbers of fry was limited during this period, the major efforts at seeding must have been in rivers and lakes within a day's travel by land from the hatcheries. This would confine efforts to a zone between Valparaiso and Puerto Montt.

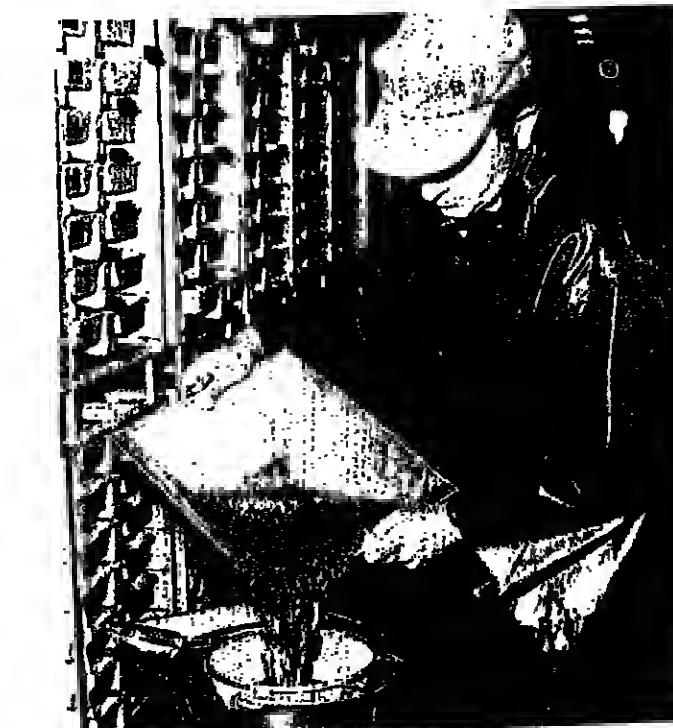
There are no records of the results of these plantings. But there is evidence, however, recorded by the hatchery at Lautaro, of the continuous production of Atlantic salmon from 1916 through 1938. The egg take peaked in 1932 at 1,120,000. This suggests that a population of about 500 adult females and possibly as many adult males was available to the hatchery operators.

Whether these fish were from a stock landlocked in freshwater, or whether they were migratory and returned from the sea to the Rio Cautin watershed on which the hatchery was located, is not known. There is no evidence of such a stock anywhere in Chile today.

Interest in the prospects for introducing salmon into Chile began to grow again in the 1960s. In 1965 and 1966, the Instituto de Fomento Pesquero (Fishery Development Institute) undertook extensive surveys of potential salmon habitats from Puerto Montt to Tierra del Fuego.



LLANQUIHUE, CHILOE, AND GULF OF ANCUD



Hatcheries, like this modern unit in the United States, would supply the salmon eggs needed to seed the Southern Ocean.

In a report summarising the results of these surveys, the project consultant, Dr. John De Wit, a professor from Humboldt State University in California and Silvia Soto Bussard, a Chilean fishery biologist, concluded that the entire region surveyed appeared favourable for the introduction of salmon.

They based this conclusion on an analysis of stream gradients, potential obstacles to fish passage, texture and porosity of stream beds, temperature and clarity of fresh water, temperature and salinity of salt water, avail-

ity of potential food and the apparent lack of marine predators. De Wit and Soto Bussard favoured chinook and coho salmon for stocking experiments. Coho had the disadvantages of greater costs and effort needed for the year-long rearing period necessary to produce seedling smolts. But the surveys suggested that this would be offset by higher survival probabilities for the large coho smolts, and for early returns of precocious male 'jacks', that could be expected with species that smolt earlier.

In 1968 and 1969, according to Dr. Sergio Basulto, formerly an official with Chile's Fish and Game Division of the Agricultural and Cattle Breeding Service, a total of 180,000 fertilised coho salmon eggs were shipped into Chile from the states of Oregon and Washington in the USA. They were taken to the hatchery at Rio Blanco on the slopes of the Andes mountains in the province of Aconcagua, northeast of Santiago.

After incubation was completed, the fry were reared for one full year in earthen ponds fed from a mountain spring that remains cool and clear the year round.

Semi-anesthetized smolted fry were then taken by truck to a planting site near Puerto Montt (41 deg. 30'S), a distance of about 1300 km. The fish were reared at Rio Blanco rather than at the hatcheries at Poteira and Lautaro that are much closer to Puerto Montt, because at the latter two, the temperature of the water during the Chilean summer was too high for continuing the incubation of the eggs begun at the onset of the northern winter in Oregon and Washington.

The stream in which the fish were planted flows into Reloncavi Sound, a semi-enclosed body of salt water that opens into the Gulf of Ancud separating the mainland from the island of Chiloe (see map).

The smolts survived the long trips in relatively good condition. Since they were planted close to an arm of the sea where they might be expected to find suitable feed and relative security from heavy predation by trout, there were high expectations for success.

But there is no evidence that these coho returned to the planting site, nor that any were captured in the fisheries of Reloncavi Sound and the Gulf of Ancud.

In 1969, Chilean interest in the introduction of Pacific salmon received a further stimulus from Japan. Experts from the Japan Fisheries Association, working with Chilean biologists from the Division de Pesca y Caza, undertook a two-year survey of the potential of Chilean waters for salmon acclimatization and culture.

After a wide search, the Japanese experts narrowed the field to the Rio Simpson watershed in the south-central

province of Aisen. In 1971 the exploratory work continued with the support of the Japan International Cooperation Agency. A Chilean-Japanese team finally selected a site on the Rio Claro, a tributary of the Simpson, close to its junction with the Simpson at the town of Coyhaique about 70 km upstream from the head of Aisen Fjord (45 deg. 25'S). The Japanese experts considered the water of the Claro ideal for salmon propagation.

In November 1972, 150,000 eyed eggs of cherry salmon from the September run on the Mena River in Hokkaido were air-shipped to temporary rearing facilities in the Rio Claro near Coyhaique. In January 1973, the 85,000 surviving fry were released into the Claro, and their subsequent growth in the river was carefully monitored for 56 days.

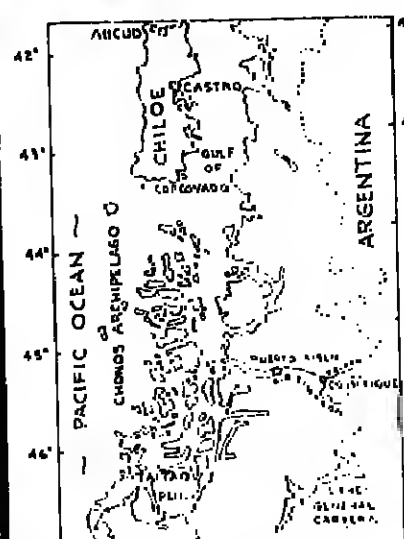
The rate of growth proved higher than in their native river in Hokkaido, not surprising as it occurred during the summer season in Chile rather than the winter in Japan.

This information was obtained from an excellent, detailed report by Aliaky Nsgasawa and Pablo Aguilera published by the Japan International Cooperation Agency.

In 1974, seeding experiments were continued with chum salmon from the Tokachi River in Hokkaido. By 1975, a permanent hatchery with a five-million egg incubating capacity was completed near Coyhaique. It was named in honour of Dr. Yoshikazu Shiroishi, a Japanese ecologist who died in Coyhaique while working on the project.

From 1974-76, two million eggs were shipped each year from Japan to Coyhaique. Shipments were increased to four million in 1977. Each year, in January and May, the fry are released into the Rio Simpson.

Although there were no returns from the 1973 release of cherry salmon, none were expected. It was merely a small-scale experiment for observing the growth of the fry in the river. There were, however, hopes for returns from the 1974 release of chum. None ever appeared. Time will tell whether the subsequent seedings of chum in the Rio Simpson will be successful.



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## The books page

# STORY OF A FRENCH TRAWLER SKIPPER

CAPTAIN Jean Recher, skipper of a classic trawler has written a classic book. Once started, *Le Grand Metier*\* becomes compulsive reading.

Elsewhere in France the phrase chosen for the title simply means one's main occupation; in the port of Fécamp it means employment in a trawler seeking cod in that inhospitable region from Newfoundland and in Greenland and Iceland north and east to Bear Island and the Barents Sea.

Recher has written a "plain, unvarnished tale" of ships and of the relentless pursuit of cod and profitability.

It is an authentic hook, backed up by 20 pages explaining the nautical and slang terms he employs.

### Smells of fish

The author is firstly a fisherman and secondly a writer. The book almost smells of diesel and fish.

Most of it was written at sea — constantly interrupted by a captain's sixth sense, sparked off by an unusual boat motion or an unexpected noise from a trawl block.

Sometimes it was from the second officer whose two-fingered typing transcribed Recher's exercise books into publisher's pages.

Jean Recher's pedigree for fishing is impressive. Born in Yport — a village near Fécamp — from a long line of fishermen, he served as cabin boy, steward and seaman until he obtained command of the side trawler *Daggy-Troun* in 1949.

The cod trade in Fécamp went from super activity to total decline when Recher and his crew took Vikings, the last of the port's Newfoundlanders for sale to Norway in 1976. Before this epitaph, *Le Grand Metier* discusses real fishing. It balances nicely

between description and anecdote. There are some frightening tales of ice and fog and of seas large enough to sweep Recher's nephew overboard.

He tells of inter-fleet wars and false radio messages to send rival ships to the wrong area. Such wars assume graver proportions when a trawler into a big haul will not give way even though she is blatantly showing her starboard light.

There is a fine chapter telling how Recher peddled around Fécamp recruiting his crew. Another taken from the log of a seagoing mechanic of the early 1900s, describes a savage. And there is a tale of an insane captain exercising his power of being "next to God."

In between these and recollections of wartime fishing are snatches of fishing songs, proverbs about the weather, samples of Fécamp dialect and an unstoppable humanity.

*Le Grand Metier* is a "big" book in every sense of the word. It should be well worth translating from the French to give it an even wider readership.

Colin Jones

\*Published by Plan in its Terre Humaine series.

## Second Canada guide

THE Second Edition of *Marine Canada* has been published by Canada's Department of Industry, Trade and Commerce.

This directory describes 135 Canadian shipbuilders, consultants, manufacturers of marine products and service components selling in the international market.

It provides designers, shipyards and shipowners with a handy reference to Canadian sources of ships, marine products and services.

Copies of the 185-page directory can be obtained from Ships and Components Division, Transportation Industries Branch, Department of Industry, Trade and Commerce, 240 Sparks Street, Ottawa, Ontario, Canada, K1A 0H5.

## World's fishing fleets

THE EFFECT of widening limits on plans for the industries operating long-range fishing ships is apparent in the estimated total number and tonnage of the world's trawlers and other ships, fish carriers and fish factories in 1977.

Set out in two tables in Lloyd's Register of Shipping Statistic Tables for 1977 are figures, arranged in size categories, for 19 940 ships

engaged in fishing, fish carrying or processing for 114 countries and territories. This is an increase over 19 651 ships in 1976, and the aggregate gross tonnage rose from 11 848 548 to 12 162 035.

With a fleet of 4017 vessels aggregating 6 440 068 gross tons, the USSR had 20 per cent of the world's fishing ships in 1977, and she accounted for 53 per cent of the total tonnage.

THIS YEAR is the Jubilee Year of that enterprise which has developed into Fishing News Books Ltd. Jubilees call for retrospect. That retrospect shows that since the United Nations was formed after the Second World War and established the FAO to increase world food supplies, the total catch of fish has trebled. Successive far sighted and able direction at FAO has provided the stimulus for expansion to which industry has responded.

It was in 1953 that I acquired *Fishing News* — then in small weekly form. My first step founded on wide experience of trade press activity, was to turn to rotary press production. This got the journal out 14 hours earlier and gave a larger sheet with 63 per cent extra space — both factors giving readers better service.

Within a few weeks of inception Commander A. C. Hardy (whose shade I respectfully salute) told me of FAO's first Fishing Boats Congress. With him I went to Paris to meet their officials, discuss details and agree production of the first volume *Fishing Boats of the World*.

That and subsequent volumes on fishing gear called attention to the international market and its need of service; accordingly in late 1960 we launched *Fishing News International*, first as a quarterly for a period before conversion into monthly issue to render the superb service it has.

### Better service

Basic purpose in that expansion was to give better service to FAO in its programme of reaching all fishing areas with its various projects and to widen the market for the increasing number of books we were producing under the special book enterprise then apically established.

Now in the same spirit of service, the new and current management of *Fishing News International*, expands into a new format so taking advantage of modern technology which saves time. This is a courageous step to which every good wish for success is extended.

In a tolerable long life I have come to recognise that Fate or chance, call it what you will, plays a great part in life. So I tell now this story of far-reaching consequences of a chance move.

For the production of the first *Boats Book* Jan-Olof Traugott, its editor, said to me about Christmas 1953, "I want an English-trained journalist to check the foreign article translations and discussions." "Right" I said. "I'll lend you Cedric Day for a few weeks."

So Cedric went to Rome in January 1954 — and I never got him back. FAO kidnapped him for be proved so useful to them. Cedric had been with me in my Fleet Street days and was a soundly trained news-bound with a nose for the unusual newsy item and the capacity to use it to best advantage.

He found in and around FAO a wealth of good items about fishery prospects and activities that he knew people would like to know about. So he began sending out with approval,

press releases which met ready acceptance by widespread journals.

Among the people he met was Gus Illugsson, an Icelandic master fisherman, who had been engaged on shrimp research off the West Coast of India.

He had found the major breeding and feeding grounds of the shrimp — long known in those waters as a source of trading. But he had discovered "a real gold-mine" he asserted to Cedric, had reported it and the report had been duly forwarded to the Indian fishery authorities. That was a couple of years back — but he deplored "where's the action?"

"Show me the report" said Cedric, and from it he prepared a newsy item announcing "discovery of a goldmine of shrimp." Published abroad in many papers, the item trickled back to India where the authorities enquired why they hadn't been told. Directed to search their shelves, the report was duly found and action spurred.

I met Cedric Day a couple of weeks back near Bournemouth where he is now retired and had an enjoyable evening with him. I revived that story.

"Yes," he said, "action did result. Hundreds of craft descended on the area and have done so every year since. Millions and millions of pounds of revenue have been derived from that area and is still being secured — in fact the fishing is now so heavy that it is extending round into the east coast areas and there may be a danger of over-fishing and the mine becoming exhausted."

That story illustrates three points. First, the researcher and the scientist discover the material facts about a resource or a project. Next, news of that discovery has to be published and disseminated to interested parties in order that action might be taken in development.

### Prime function

Reports lying on departmental shelves do little good. It was Cedric's newsy item that sparked that Indian activity. And it is the prime function of print — through journals and books — to disseminate the information which can spur into action the practical fishermen in the various roles needed to secure action and development.

In retrospect, then, *Fishing News Books* can look back over the past 25 years with reasonable satisfaction at having rendered good service to the fisheries of the world in the steady production of books of value from FAO and other authors of note. To all those scientists and authors, we extend not only our thanks but the thanks, we can safely say, of many thousands of readers the world over who have benefited by their labour.

## walkabout talkabout with Arthur J Heighway



But the task is a continuing one. The future poses many problems. Goldmines sometimes run out. Resources can become exhausted. The fishing industry has already learnt that modern power and gear can sweep clean the floor of the sea. Several known fishery resources are already endangered.

On the land man first survived by hunting and then by farming. At sea and in the oceans the farming stage is now beginning. It is needed to replenish stocks, and urea control is required to protect interests. The Kyoto Conference on Aquaculture provides many lessons. Its material now passing through our hands to the printer, under the title *Advances in Aquaculture*, emphasises that in many important chapters and papers.

### Can be done

One paper is particularly impressive on the point of replenishing the stocks taken from the sea. This idea is not new. It was first mooted in 1869 and is being steadily developed not only by Russia and Japan in isolated and specialised waters but also in USA, Canada and other countries for use with certain special stocks. The point is that the practice definitely can be done successfully and more and more use is certain to be made of this technique in future.

The difference between land goldmines and sea goldmines or natural resources is that in the sea effective recruitment of stocks by pouring fry in quantity into selected areas can be carried out easily and successfully given the will and co-operation and remarkable results have been achieved.

The last journal I launched, *Fish Farming International* — first in book form by us, and now effectively developing as a vigorous quarterly by the company which still carries my name but is now under separate management — has the function of concentrating solely on all aspects of fish farming both on land-waters or in the sea and will, I am sure, capably fulfil its destiny.

Lastly — here is news of a welcome reprint of a very useful book. It is of Garner's *How to Make & Set Nets*. First published in 1962, this masterly work with its straightforward text and competent illustration of designs has been a steady best seller. Some new designs have been added to the illustrations thus expanding its usefulness. Two manuals prepared by FAO strengthen this area of nets and twines — namely *Mending of Fishing Nets and Netting Materials For Fishing Gear*. They too provide knowledge that may well solve many problems.

Then came the steam trawlers, some of them "held together by cement, iron rust and God's mercy," which took ownership out of the reach of the average ambitious fisherman because of their high cost.

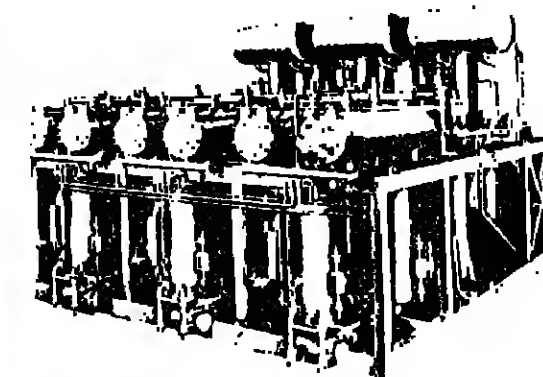
### Statements

There are one or two statements which one might contest from local knowledge, such as the Brightlingsea fishermen resulting improvements like the steam trawler to the last.

The author could, perhaps, have mentioned the activities of double beam trawlers and the clams, and counter-claims, about this method of fishing.

These, however, are minor criticisms of a very worthwhile book.

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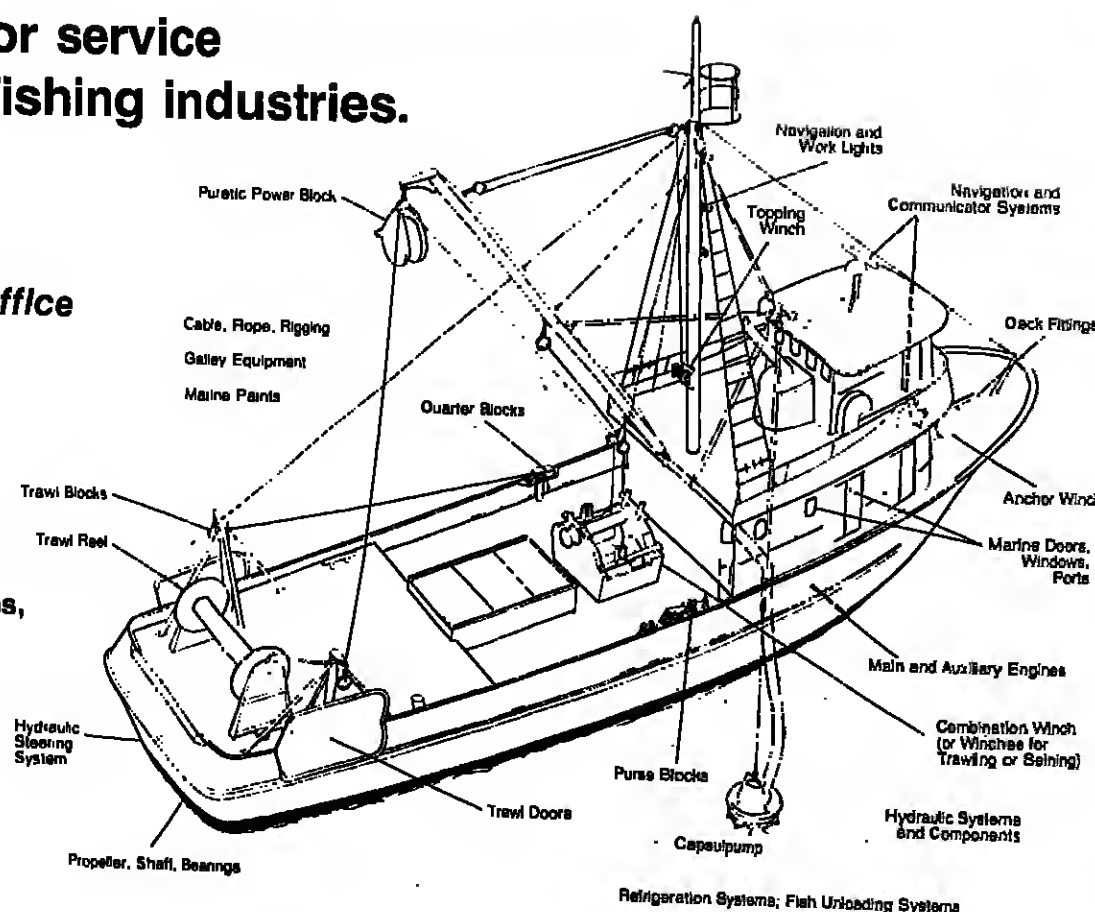
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## From fish traps to trawlers

Pat O'Donnell reviews "Business in Great Waters"  
Published by Angus & Robertson  
Ed. at £12.00

IN AN EXPENSIVE but very well illustrated book, John Dwyer tells the story of the British fishing industry from before it became organized until the end of the second world war with Iceland. The story runs from fish traps to the early beam trawl, from the sailing smacks to steam and then to motor trawlers. It describes the money to be made out of herring and tells how long it was before British fishermen caught up with the Dutch in curing them. Yet the secret was not hard to discover, part of it being the care of the catch and cleanliness.

There is much about the fishing system and the long spells at sea that is covered. Also of the activities of the fishing gear-shops, which caused so much misery, and of the various smacks and trawlers.

Then came the steam trawlers, some of them "held together by cement, iron rust and God's mercy," which took ownership out of the reach of the average ambitious fisherman because of their high cost.

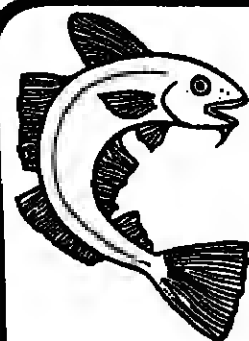
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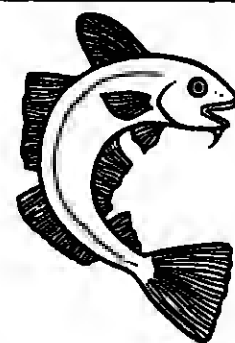
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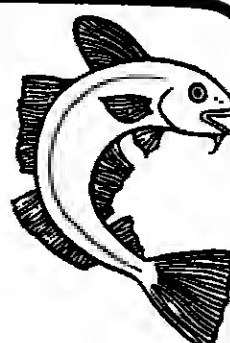


## Book News

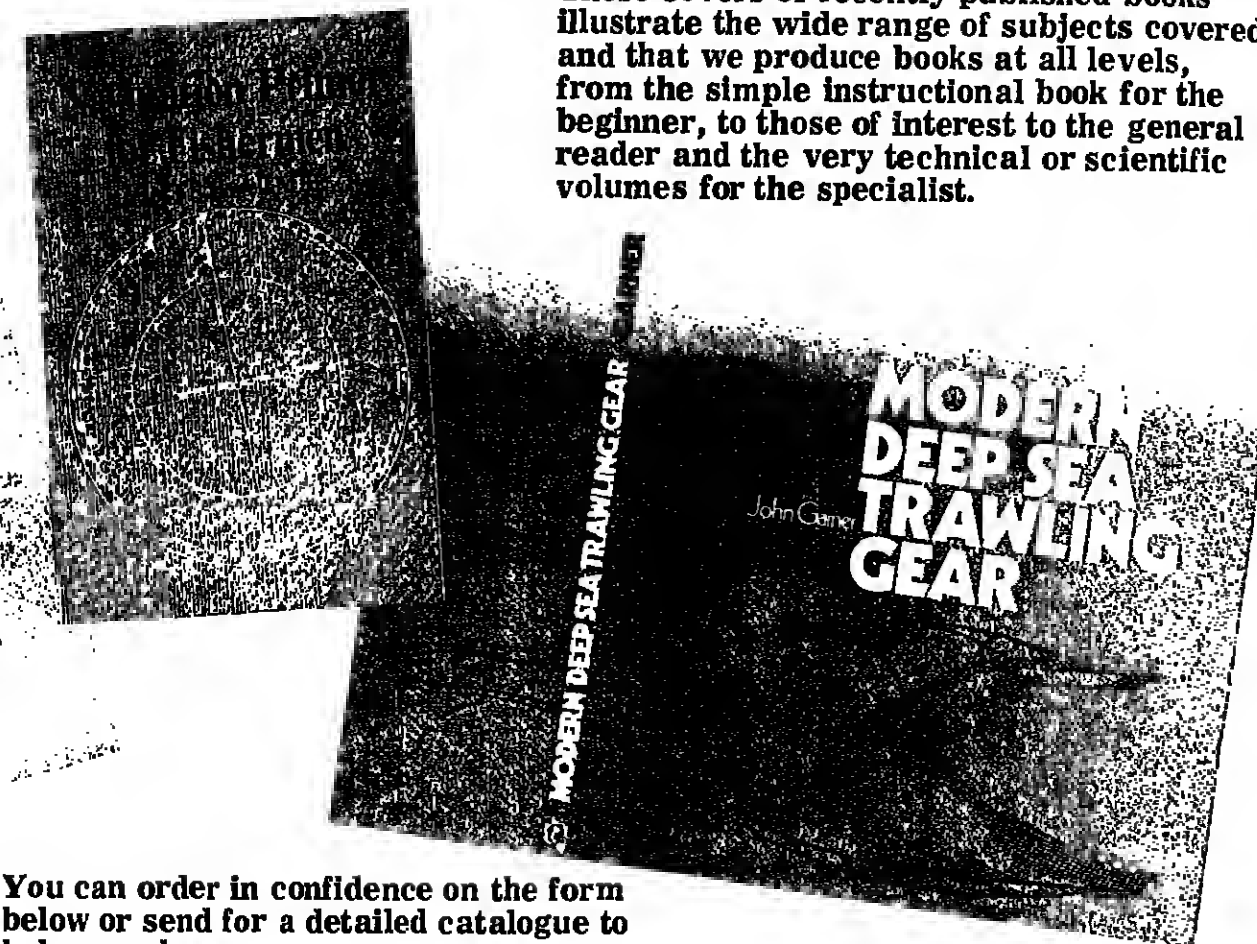
Fishing News Books Limited specialises in publishing practical books on commercial fishing, fish farming and allied themes.



## Book News



These covers of recently published books illustrate the wide range of subjects covered and that we produce books at all levels, from the simple instructional book for the beginner, to those of interest to the general reader and the very technical or scientific volumes for the specialist.



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## Flashing lifelight approved

A NEW British-made high-intensity flashing lifebuoy light has been approved after undergoing government tests.

Known as the Astra, the light is the latest in marine safety aids from McMurdo Instrument Company Ltd., of Portsmouth, England. Powered by mercury cells, the Astra is activated by a mercury switch operating when the light is upright.

It has a light intensity of 50,000 lm and can be stored for at least 12 months.



## product news

METHOD • GEAR • EQUIPMENT  
• PLANT • COMPANIES

## Small net hauler with auto grip

A NET hauler for the small Mediterranean fishing boats has been introduced by Sulparec Automatic Massimiano of Salerno, Italy.

It is powered by an hydraulic motor and the reel is fabricated from mild steel.

A series of gripping fingers inside the reel are opened and shut automatically as the reel rotates. These fingers grip the net as it comes over the reel and free it as it comes inward. The fingers are spring loaded and operate against a cam to obtain the movement.

The two sizes of reel allow for pulls of 250 and 500 kg. The action is completely automatic once the net has been fed into the reel. This allows for easy single-handed operation of the boat's gear.

## ABC WIDENS ITS POWER RANGE

THE Anglo Belgian Company (ABC) has extended the power range of its medium-speed, four-stroke DX models with a new DZ design.

Intended for marine propulsion as well as for marine generating sets, the DZ in its initial six-cylinder form delivers 1800 hp (1325kW) at 1000 rpm. The engine will be offered in pressure-charged/intercooled form as standard.

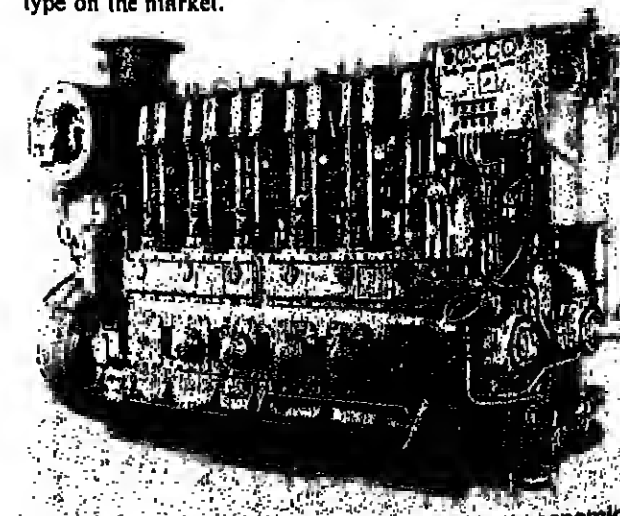
Designed "within conservative parameters," the DZ is claimed to be a "most economical engine." The specific fuel consumption is 158 g.bhp.h (with fuel of c.v. 10 000 kcal/kg) between 50 and 100 per cent load.

With the DZ, the Anglo Belgian Company has an engine with twice the specific output of the DX. Output is 300 hp per cylinder with a b.m.p. of 16.96 kg/cm<sup>2</sup>.

Piston speed is limited to 10.32 m/s. The number of cylinders is minimised and the DZ retains the traditional number of six for the basic model, although the bore is increased to 256mm. Stroke is 310mm, giving a stroke/bore ratio of 1.21.

Pressure charging is based on the Buchi or impulse system, with Brown Boveri supplying the VTR250 exhaust-driven pressure charger.

"Low production costs have not been neglected," says ABC. "By careful design we have avoided unnecessarily over-sophisticated machining and tooling techniques. This has resulted in the DZ being the lowest priced engine per hp of its type on the market."



The new DZ power unit from ABC: A "most economical engine."

## TWO SONAR FROM FURU

DESCRIBED by its manufacturer as a "technical breakthrough in fish finding," the model FSS-75A is one of two new sonars introduced by the Furuno Electric Company of Japan.

This model is a sister version of Furuno's FSS-31C full-circle multi-beam scanning sonar but has a smaller hull unit. This weighs 440 kg. and can be fitted in vessels down to around 20 tons.

Working at a frequency of 75kHz, the FSS-75A has three ranges — 0-200, 400 and 800 metres — which, says Furuno, can be expanded to 0-350, 700 and 1400 m. by 75 per cent off-centering. The 180 deg. sector can be oriented in any direction around the vessel to give a full 360 deg. search capability.

Targets are shown on a 10-inch screen; audio indication and recorder are optional extras.

Furuno describes its new FH-105 as a "compact low-cost sonar" giving an easy-to-interpret picture on a bright PPI scope.

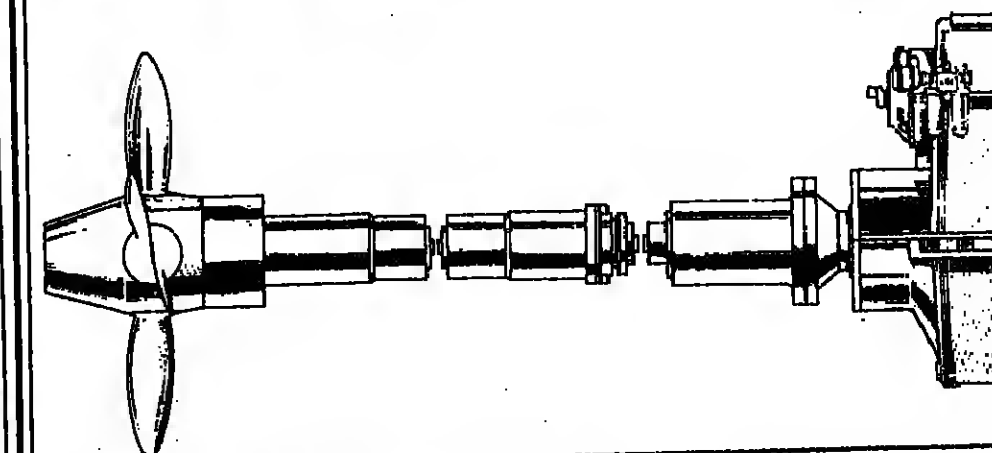
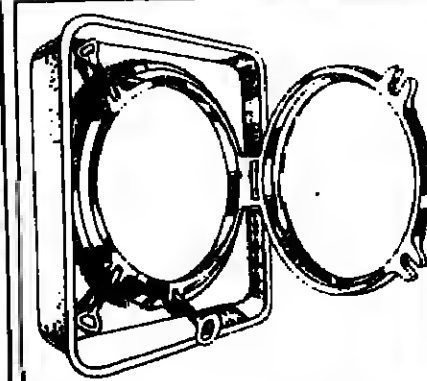
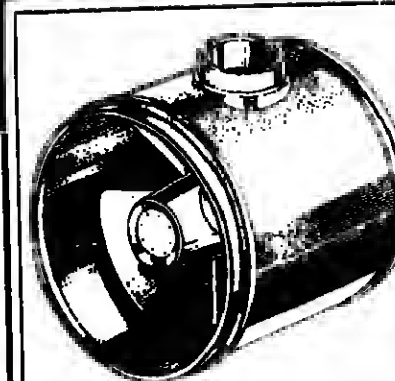
The instrument works at a frequency of 150kHz, and the range scales are 25, 50, 100, 200, 500 and 1000 metres.

Modes of presentation are automatic sector scanning and manual tracking.

The FH-105 has a mechanism that stabilises the transducer, offsetting the ship's pitching and rolling.

Furuno  
75A  
'te

## DETAILS THAT COUNT



### TRANSVERSE THRUSTERS

Delivery of transverse thrusters covers a considerable part of the total sale Production covers the area 75 — 1500 BHP. They are delivered for hydraulic, diesel or electric drive.

### G.R.P. PRODUCTS

The ULSTEIN Group have their own plant for G.R.P. products for the marine industry, such as life belts, containers, window frame sections, fire hose and lifebelt boxes, watertight doors etc.

### FCM JOYSTICK

The FCM is an integrated manoeuvring control system, where all propeller units are connected. The course setting is made on a gyro repeater, and by using one universal lever (the joystick), the vessel can be moved in all directions, remaining at the same course.

### C.P. PROPELLERS

Controlable Pitch Propeller gear, power range from 200. They are in use in approx. 10





## Easier line throwing

THE Royal National Lifeboat Institution in Britain is now using Speedline — a compact, easy-to-use line-thrower — in some of its boats.

Made by Pains-Wessex and Schermuly Ltd., the Speedline unit supersedes the 30mm line-throwing set used by the RNLI.

"The new unit was designed with simplicity in mind," say the makers. "Apart from being easy to use and light in weight, Speedline has a range of 200 metres in good weather and is more accurate than its predecessor."

It is used extensively in merchant vessels throughout the world, and more than 26,000 have been sold in the last two years.

Further information from Pains-Wessex, Schermuly, High Post, Salisbury, Wiltshire SP4 6AS, England.

## product news

METHODS • GEAR • EQUIPMENT  
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### Three men saved

FIVE MEN died after a wave flooded the fish hold of the British trawler "Boston Sea Ranger" off the Cornish coast in December.

The three remaining members of the crew were saved by their RFD 10MM liferafts. They were picked up by the trawler *Arctic Buccancer* and came ashore at Newlyn the next day.

RFD's representatives at Newlyn, who had seen two of the survivors, reported that the liferaft worked excellently.

## HIGHER GEAR RATIOS FOR HIGHER SPEEDS

Twin Disc's new MG-518 Marine Transmission

TWIN DISC chose US Fish Expo 78 in Seattle to introduce two new high-ratio, deep case marine transmissions. They are designed to meet the performance requirements of high-speed marine engines in the 365 to 620 hp range.

The new Model MG-518 handles up to 490 hp at 1800 rpm, continuous workboat rating. The five ratios (from 4.06:1 to 6.48:1) are identical in design except for the size of the pinions and counter-shaft gear.

Maintenance accessibility is claimed as one of the outstanding features of the MG-518. "It is not necessary to remove the transmission or disturb alignment for most service functions," says Twin Disc.

### Four ratios

Above the 490 hp range, the Twin Disc MG-520 takes over to 620 hp at 1800 rpm. There are four ratios available, from 4.49:1 to 7.00:1.

Like the MG-518, the MG-520 can be operated continuously in either forward or reverse at full power when installed on standard engines.

Both models use Twin Disc's rubber block drive which helps cushion transmitted engine torque and compensates for misalignment.

"With their deep ratios and high speed capabilities," says Twin Disc, "these two marine transmissions offer users lower cost per horsepower, a balanced design incorporating long service life features, better fuel consumption and significant space advantages."

The addition of these two new models extends the Twin Disc range to 14 different marine transmission models in 77 ratios. These can meet the requirements of vessels with engines from 100 up to 1780 hp.

### Distributors appointed

THE marine division of Petters Ltd., England, has appointed three new distributors for its marine engine sales and service network in Scandinavia.

Thorsen and Møen A/S, of Oslo, will handle sales in Norway.

The Danish representative is E. V. Schou and Co., of Copenhagen. For the past 12 years the company has been selling its own Evesco brand of marine equipment and handles marine engines from six to 250 hp.

Greibstad Bil and Motor, of Greibstad, will serve as the Swedish distributor.

## Marco aluminium skiff for purse seiners

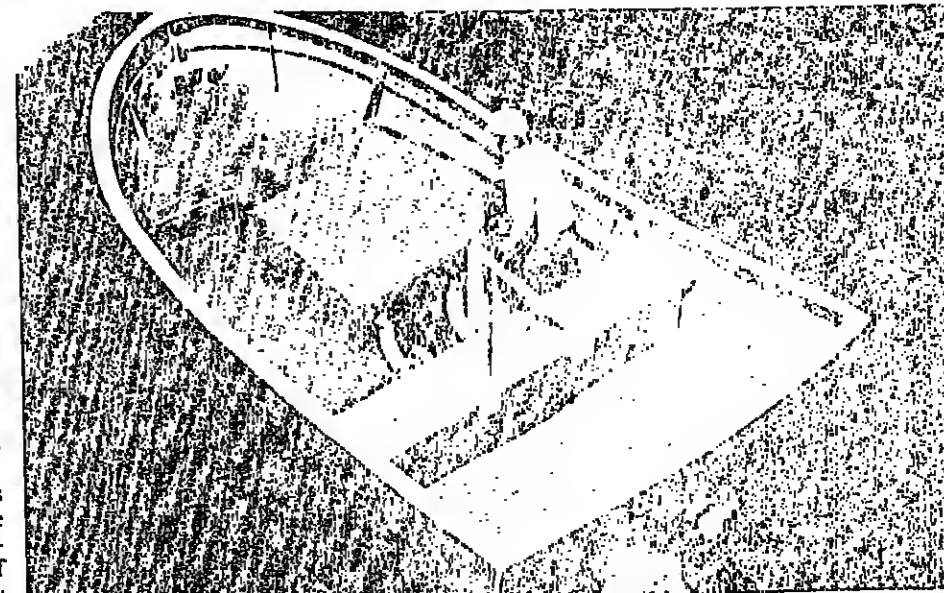
A NEW type of 19 ft. (5.8 metre) long all-aluminium skiff (the ASK-19) for medium-size purse seiners is in production at the Seattle works of Marine Construction & Design Company (Marco).

Initially, Marco turned out a batch of eight of these boats. Fishermen who tested them last summer reported that they were lighter to handle, faster, quieter and yet more powerful than comparable skiffs, said Mr. A. W. Engle, sales manager of Marco's shipyard division.

The first run of boats was for use with salmon purse seiners fishing for Whitney-Fishco Seafoods Inc. of Seattle. Designed primarily for Alaska purse seiners, the new skiff can also be used with other medium seiners, and as a small workboat.

Although Marco has built about 170 steel skiffs from 14 to 22 ft. since 1953 — when it pioneered the all-steel skiff for salmon purse seiners — the new 19-footers are the first aluminium skiffs from the company's Seattle yard since one 16 ft. boat in 1966.

It was an entirely unrelated



Marco's new 19 ft. skiff is designed for purse seiners, but it has other uses too.

industry — the fabrication of oil spill skimming vessels — that led Marco back into skiff-building with aluminium.

The skiff design has a 10 ft. beam, 4 ft. depth, and 3 ft. draft. It is designed for a GM 6V53 180 hp engine with heat exchanger, although other engines can be specified. Operating weight is 6300 lb. and light weight is 5600 lb.

## ...and a new superseiner power block

ON SHOW at Fish Expo 77 in Seattle was a new Purtec power block, named the "SuperSeiner." Described as the world's largest by the manufacturer, Marine Construction & Design Co. (Marco), it has been introduced for hauling tuna purse seiners.



The model 56A (with a 56-inch sheave diameter) has 250 hp maximum input. Pull is more than eight tons with hydraulic oil input pressure of 2000 psi. Having this power and size, the 56A can handle existing nets and larger nets anticipated within several years, said John R. Logan, Marco vice-president of sales.

Following the model's introduction at Fish Expo, eight were sold for installation on large tuna purse seiners.

## 'Complete detection' with two sonars

WESMAR'S Marine Systems Division is now marketing the Seattle company's SS230 low frequency and SS220 high frequency sonars in a dual system.

The two instruments synchronise with each other. While the SS230 investigates long-range targets, the SS220 provides detailed resolution of underwater targets at closer ranges. Each sonar can also be operated separately.

Both sonars are able to sweep 360 deg. round the vessel or scan a specific sector. For rougher waters, they have Wesmar's patented transducer stabilizer system.

Wesmar's R50 chart recorder comes with the dual sonar system. Targets displayed on the SS230's CRT screen are also recorded on the R50 chart paper.

Each transducer is retrieved into the hull when the unit is turned off by the company's new compact hold system. The low height of the hold, says Wesmar, allows the dual sonar system to be used in boats with very limited space.

## Seascan introduces new model radar

ELECTRONIC Laboratories Ltd., of Dorset, England, has introduced a new model to its Seascan radar range.

Known as Seascan III (pictured right), the set offers six selected range scales from half-a-mile to 16 miles.

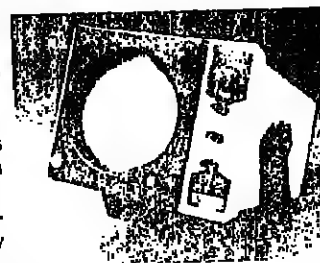
Smooth-action rubber rollers rotate the cursor assembly which is now variably illuminated for day or night use.

Colour coding on the display unit facilitates reading of control knob functions and the incorporation of a larger mounting bracket permits a wider viewing arc.

### Magnifier

Also fitted is a solid riser assembly with specially-designed soft viewing mask into which a magnifier is incorporated as standard.

Priced at £975, the Seascan is on show this month at the London Boat Show at Earl's Court.



### Trawl maker expands

RISING sales for Scottish net-makers Jackson Trawls of Peterhead, have led to a doubling of work space and a 30 per cent. increase in workforce.

An associate company of Hirdport-Gundry, the Scottish firm is gradually increasing its haul and seine net exports, although Scottish vessel owners still remain the main customers.

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The set can be programmed, so that for one or more channels an external information is submitted, e.g. for the blocking of extra receiver (river traffic).

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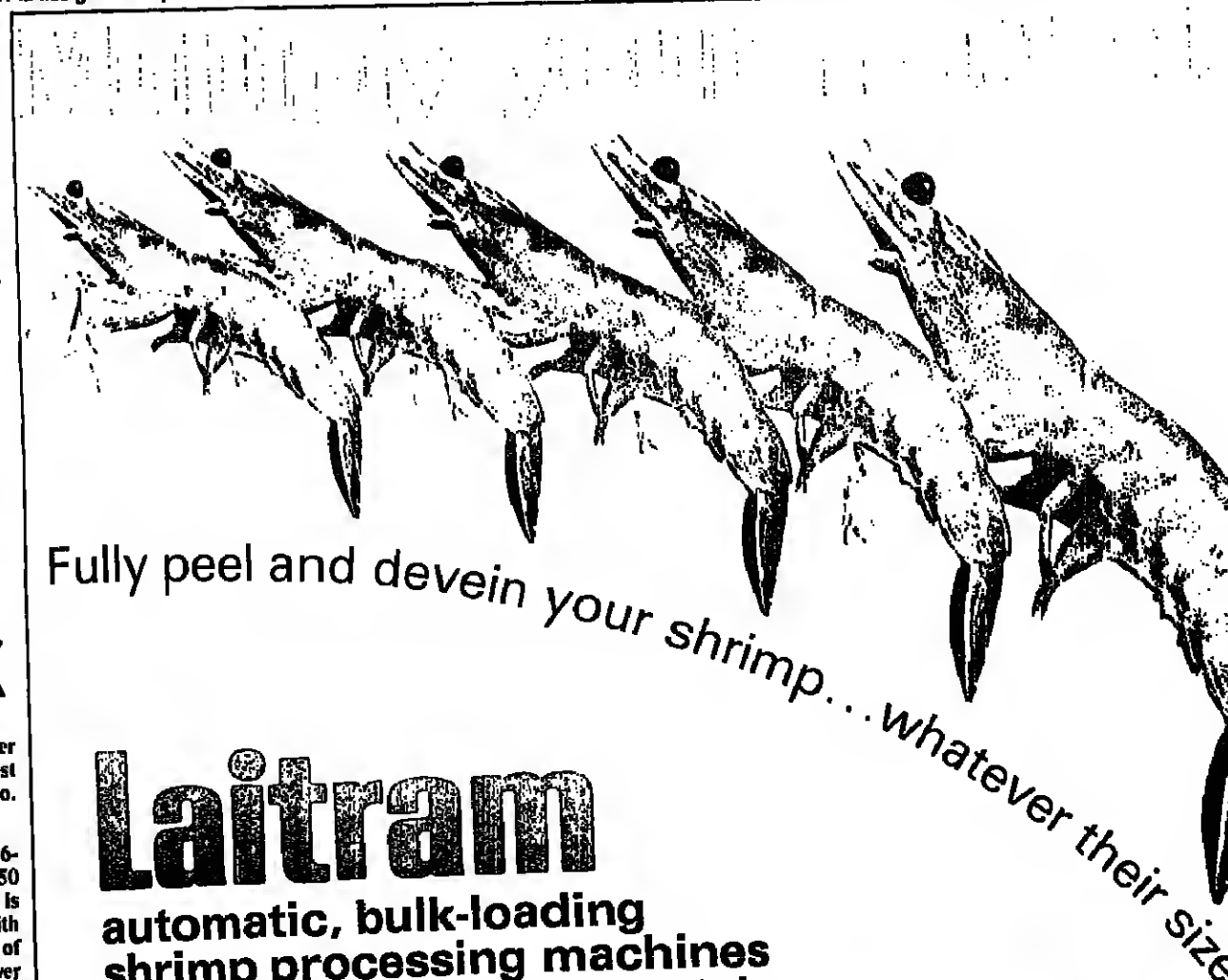
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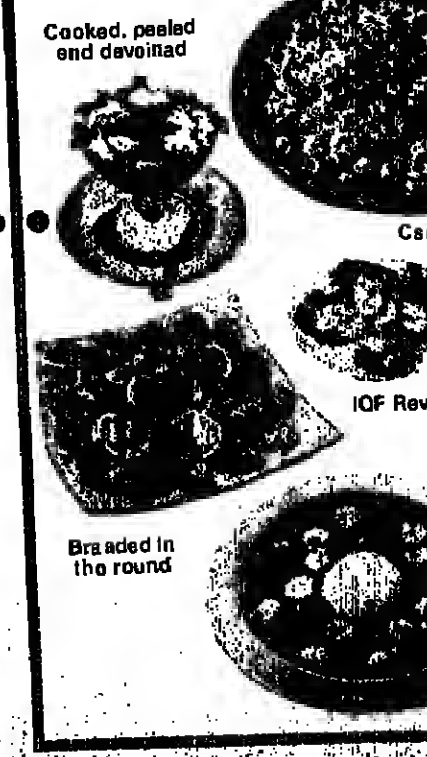
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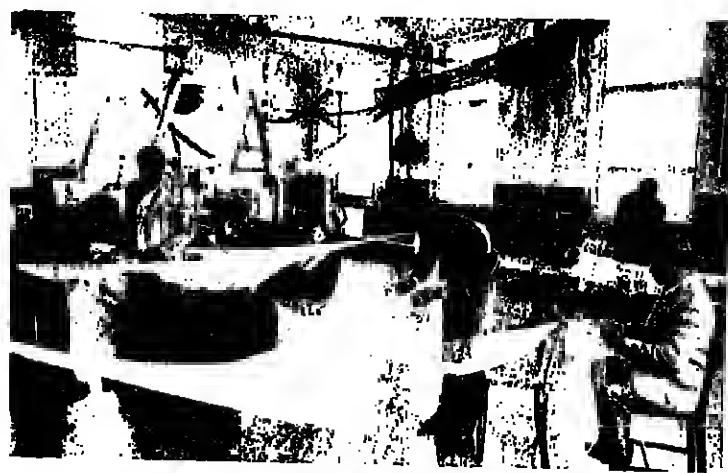
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## training in fisheries



Students prepare model nets at Grimsby.

# New course for gear technology

THE FIRST ten students were enrolled in a new course on fishing gear technology at the Grimsby College of Technology in 1977. They came from India, Pakistan, Sri Lanka, Cyprus, Zambia, Tanzania, Ghana, The Gambia, Nigeria and Sierra Leone. Already experienced in fishing craft or gear, they took on 39 weeks of study of fishing gear design and construction, engineering technology, physical sciences and the environment, fish capture techniques, fishing boats and management.

For some years now, the Grimsby College of Technology has played an international part in the training of fishery officers. Our list of diploma courses has recently been increased to include Fishing Skipper/Master Fisherman and — in collaboration with the government of Mexico — the Diploma in Fisheries (Fishing Instructor). Students on this course teach at secondary fishing schools in Mexico.

—by—  
**CLIVE RADCLIFFE\***

that all the subjects are inter-related. Physical sciences and environmental studies cover hydrography and the structure of the sea and ocean beds including estuarine waters. A study is also made of important aspects of aquatic life from its simplest form to commercially viable species, with special references to food chains and fish behaviour.

It is essential that the gear technologist has a good understanding of various aspects of engineering technology. Therefore machines, the manufacture of materials, hydrostatics, hydrodynamics, hydraulics and electronics form an important part of the course.

But its main function is to give the students a comprehensive working knowledge of fishing gear design, the operation of gears, and a practical appreciation of manufacture and assembly.

The course involves in-depth study of research and development techniques used in gear design. Model making at 1/10th, 1/8th and 1/20th scale is included for flume tank testing.

Tests include measurements of warp, declination, warp divergence, headline height, and warp loads which are utilised to give useful comparisons between various gear types. All major commercial fishing gear designs are studied together with methods and techniques supported by investigation of vessel types and deck machinery.

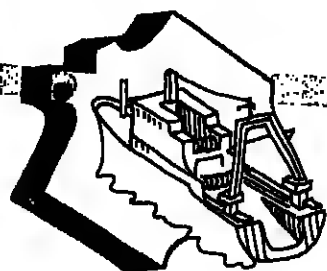
One of the more difficult roles of the gear technologist is in choosing or matching fishing gear to a vessel, and involved considerations have to be borne in mind in making the correct choice.

Even if the correct decisions are made, there are very often slight adaptations to enable the gear to suit local conditions. These parameters cannot readily be solved by formulae and the College aims to give the students an understanding of many of the problems and how to make the correct choice of both gear and rigging.

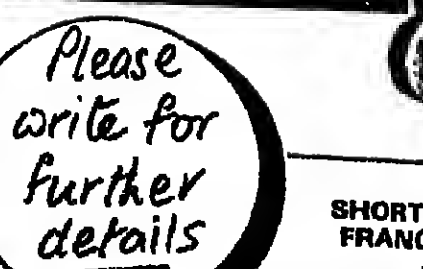
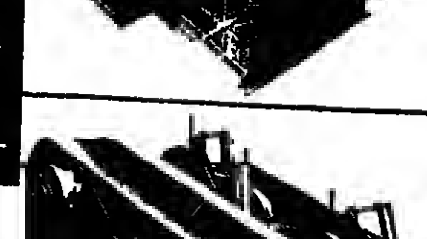
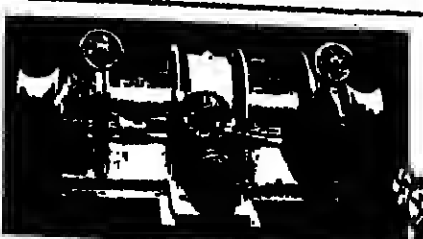
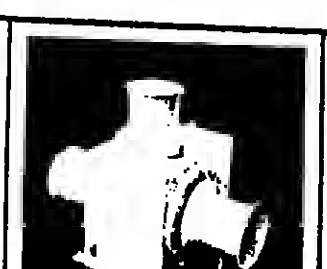
\*Mr. Radcliffe is Principal Fishing Gear Technologist, Grimsby College.

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## To the graduate with 'true grit'

AN EX-TRAWLER deck hand has become one of the first graduates in the new Fisheries Science B.Sc. degree course at Plymouth Polytechnic, Devon, England. Only one other similar course is offered in the whole of Europe.

His work also won Mr. Richard McCormick the Sir Francis Chichester Award for 'grit and determination' characteristic of the famous yachtsman. He chose a painting of the British side trawler *Rose Kartoum*, the ship in which he once served.

Pictured above (left) at the presentation, the largely self-taught 'deckie' supported himself throughout the four-year course. He graduated with the highest marks yet awarded. He now works for the British White Fish Authority.

Conducted under the aegis of the School of Maritime Studies, the degree course is aimed at encouraging improvement and technical development within the fish industry.

Not all the study work takes place at Plymouth. The new nautical college at Hull has a number of facilities on offer to students and sections of the course dealing with fishing methods and fishing gear technology are covered at the Hull College of Higher Education.

### From all over

Seventy-seven students are enrolled for the current course. They come from all over the world, including the UK, Ghana, Nigeria, Malaysia, Thailand, Iceland and South Africa.

They will soon be joined by students from America, Canada and Mexico. It is hoped that this course will achieve Honours status this year.

## Humberside plan for European fishing university

A FISHING university set up in Britain and known as the Centre of Excellence for Fishery Training and Education could be based on Humberside.

Humberside Education Committee is putting in a bid to the Department of Education and Science to run the centre.

Finance could come from the British government and the EEC's Regional Fund. The idea is to bring together and improve existing facilities for training.

For years there has been intense rivalry between Grimsby and Hull over fishermen's training and education, but with such a large undertaking it is thought that there should be ample room for both centres to survive and, indeed, expand.

Other areas of Britain are known to be interested in the scheme, but the government is thought to favour the Humberside.

If the venture gets under way, the area would become one of Europe's most important fishery training centres with a wide range of courses.



THESE two fishery teachers from Indonesia visited Denmark on an FAO fisheries study tour. They are Azwar Maroef, senior instructor in the training centre in Belawan, north Sumatra, and Prepto Yudhomo, who teaches at the Ambon centre. Both centres are part of the FAO Marine Fisheries Training Project in Indonesia. The project arranged the tour in co-operation with the I.C. Trawl Company.

While in Denmark, the teachers spent some time at the Christensen net factory and the Anderson & Sørrig winch factory studying Danish fishing gear. They also made several trips aboard Danish boats observing fishing techniques in the North Sea.



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## SEVEN NEW PATROL SHIPS FOR NORWAY

THE Norwegian government hopes to have designs and specifications ready this month to invite tenders for construction of seven patrol vessels to guard Norway's 200-mile zone.

Project work on the vessels has been carried out by the Bergen shipyard Bergens Mekaniske Verksted (BMV) in co-operation with Vickers Shipbuilding Ltd., but construction will be shared by a number of yards.

Dr. Svein Mjølhus, one of BMV's project leaders, says that the aim has been to achieve a robust and reliable vessel with an effective life of 20-30 years. The ships will have the latest technological capacity to navigation, communication, propulsion, and weaponry.

Special emphasis has also been put on a high standard of accommodation for officers and crew.

The vessels will have a top speed of 23 knots although operating speed will normally be 15 knots, or less. Two of them will be reinforced for navigation in ice.

The two main bases for Norway's new Coast Guard service are to be Bergen for the south, and Sortland on Langøy in Vesterålen for the north.

Government estimates that the first phase of Coast Guard development from 1977 to 1981 will cost around 1410 million NOK (about £141 million). This will cover construction of base facilities, the special patrol ships, purchase of helicopters and fixed-wing patrol aircraft, and building of accommodation.

# NOR-FISHING IS ON

Oslo venue chosen for the exhibition  
that just keeps on growing

THE FUTURE of the Nor-Fishing international exhibition, uncertain for some months, has now been decided. It will take place in 1978, in Oslo from November 20 to 26.

The change in venue results from the continuing success of the exhibition. It has expanded in concept and grown in size since it began in Bergen in 1961 as a local fishing fair. Its next showing was four years later

in Trondheim. There it has remained, developing into a national occasion, and eventually into what is probably the largest of the regular international fishing exhibitions.

Taking the title Nor-Fishing in 1972, it was promoted as a two-yearly event. Support from manufacturers and suppliers grew to such an extent that in 1974, and again in 1976, Trondheim's Nidaros halls and grounds were too small to accommodate all those wanting to take part.

To this problem was added the concern by some fishermen and other local people that the original idea of a fishing fair had been lost in the big international exhibition. This led to a difference of view between the Norwegian Directorate of Fisheries, who arranged and sponsored Nor-Fishing, and Norges Varemesse (The Norwegian Fair Organisation), who promoted and organised it.

Fisheries director Knut Vardal headed a committee appointed to consider the future of the exhibition. In November it looked as if its next presentation would be put off until 1980. While Trondheim was not ruled out as a venue, Oslo was mentioned. Some forceful claims for attention were also being made by the northern city of Tromsø.

But, in November, the Directorate and the Nor-Fishing committee responded to appeals from Norges Varemesse and the Export Council of Norway, from many exhibitors and others in the world-wide fishing industry. Full responsibility for Nor-Fishing has been handed over to the Fair Organisation.

It was clearly evident at the showing in 1976, that the exhibition had outgrown the facilities in Trondheim. But in Oslo, at the St. Olav Centre, which is the headquarters of Norges Varemesse, the organisation has the space and all the facilities for a large exhibition. Also, Oslo has the hotels to accommodate many more exhibition-goers from Norway and abroad.

Visiting foreign buyers leave, say the organisers, been of great importance to Nor-Fishing exhibitors. Many are from the developing countries who come to look at equipment for the fishing industries their countries are building up.

However, the organisers recognise that the move to Oslo will cause the greatest reaction among Norwegian fishermen. In the earlier "fairs," fishermen came from north and south to Trondheim.

Norges Varemesse is therefore contacting the Norwegian Fishermen's Association with the aim of creating a "special atmosphere around the fair in Oslo." It is also seeking to work closely with the industry in preparing an attractive programme of seminars covering effects of the new 200-mile economic zones, and technical matters such as the design of boats and gear.

Further information about Nor-Fishing '78 can be obtained from Mr. Tore Aalvik, Project Manager, Norges Varemesse, PO Box 130, Skøyen, Oslo 2, Norway.

## Meetings and exhibitions

### One-week course on processing, packing

A WEEK-LONG course on fish handling, preservation and processing will be held next month at the Torry Research Station in Aberdeen, Scotland.

"Fish handling" will cover spoilage, hygiene, chilling, freezing and cold storage. Other subjects include packaging, quality assessment, transport and distribution.

Thawing, smoking and canning will be discussed along with shellfish processing, fish processing machinery and by-products.

The £95.50 course fee includes lunches, light refreshments, various publications and course notes.

Dates of the course are February 6 to 10. Early application is advised as there are only 40 places.

Further information from the Director, Ministry of Agriculture, Fisheries and Food, Torry Research Station, PO Box 31, 135 Abbey Rd., Aberdeen AB9 8DG, Scotland.

### Diseases shown on slides

TWENTY-FOUR sets of microscope slides on common fish diseases have been completed by a fish pathologist in the University of Rhode Island, USA.

Dr. Richard E. Wolke, associate professor of animal pathology, who heads the Sea Grant-supported fish pathology laboratory at URI, prepared the sets for the Armed Forces Institute of Pathology.

The Institute maintains an extensive collection of human and animal disease study sets, which are distributed free to researchers around the world. But it did not include any fish diseases.

The 24 study sets cover the most common protozoa, fungal, bacterial, and viral infections in Europe and America.

## FISH EXPO TO LATIN AMERICA

ENCOURAGED by the great success of the eleventh regular annual presentation of their exhibition in the United States, the organisers of Fish Expo are now busy preparing an ambitious international venture. Scheduled for April 5 through to April 8, Expo Pesca Pan Americana will be held for the first time at San Juan in Puerto Rico.

The status of the American Fish Expo as a strongly supported, well-attended national fishery occasion was further enhanced last year by the four-day show in Seattle in October.

Exhibitors reported excellent business, including many on-the-spot sales. It was rated by those who attended as the biggest and best of the 1977 fishing exhibitions.

For 1978, Fish Expo will be in its Boston venue, from October 25 to 28. But the organisers, National Fisherman Expositions Inc., are convinced there is also scope for an exhibition directed to the growing market for fishery equipment and services in Latin America.

Expo Pesca will be presented in the Roberto Clemente Coliseum — a "modern arena accessible from downtown hotels, the airport and the waterfront area."

According to the organisers, equipment suppliers from all over the world will be taking part. Visitors from throughout South and Central America and the Caribbean will attend.

"Expo Pesca," they say, "is

### Start in San Juan

a major first step in the effort to develop another market for modern commercial fishing gear.

"Latin America has long been recognised as an area with vast potential needs. Unfortunately, lack of up-to-date information has prevented the timely development of commercial fishing in many of its areas."

"Manufacturers and distributors have not had adequate information on the needs of the market, and buyers there have, too often, not been aware of the range of equipment available to them."

"Expo Pesca is expected to reduce this problem by providing a forum in which buyers and sellers may make contact."

Further information about Expo Pesca Pan Americana can be obtained from National Fisherman Expositions Inc., 21 Elm St., Camden, Maine 04843, USA.

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## Show in Seattle Coliseum

More than 260 exhibitors, 8300 visitors. These were the statistics of success for the eleventh showing of US Fish Expo in October. The wide variety of fishing and processing equipment on display packed the large Seattle Center Coliseum almost to overflowing, as this general view of Fish Expo '77 shows.

Foreign participants included a group of Norwegian and a group of British stands.



## NEW MIGHTY MINI FROM MYREN PUMPS 200 TONS OF FISH PER HOUR

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